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EVALUATION OF LEVELS-DESIGNED VISUAL-AUDITORY AND RELATED WRITING METHODS OF READING INSTRUCTION IN GRADE ONE.

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*READING INSTRUCTION, *FIRST GRADE, *READING TESTS,
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READING PROGRAMS, SANGER, CALIFORNIA, CLOVIS, MINNEAPOLIS, MINN.

THIS RESEARCH STUDY EVALUATED THE EFFECTIVENESS OF THREE METHODS OF FIRST-GRADE READING INSTRUCTION EMPLOYING SIMILAR BASAL READER STORY CONTENT. THE THREE METHODS WERE--(A) THE INSTRUCTIONAL PROCEDURES OUTLINED IN THE TEACHERS MANUAL ACCOMPANYING THE GINN BASIC READING SERIES, (B) A LEVELS-DESIGNED PROGRAM STRESSING EARLY INTENSIVE LETTER READINESS ACTIVITIES FOLLOWED BY EXPERIMENTAL PROCEDURES FOR TEACHING WORD RECOGNITION, PHASE READING, ORAL AND SILENT READING SKILLS, AND (C) READING PROCEDURES SIMILAR TO THOSE SPECIFIED IN METHOD B IMPLEMENTED AND SUPPLEMENTED BY A 10-LEVEL WRITING PROGRAM USING BASAL READER VOCABULARY. BOTH METHODS B AND C USED THE GINN READING SERIES FOR VOCABULARY AND STORY CONTENT ONLY. CERTAIN GENERAL PROVISIONS FOR DIFFERENTIATING AND INDIVIDUALIZING READING SKILLS INSTRUCTION WERE FOLLOWED BY TEACHERS OF GROUPS B AND C. THESE COVERED IDENTIFYING DIFFERENCES IN ABILITY LEVEL, INDIVIDUAL RATES OF LEARNING, REMEDIAL SKILLS, ENCOURAGING INITIATIVE-THINKING ABILITY, AND IMPROVING QUANTITY AND QUALITY OF PUPIL PARTICIPATION READING ACTIVITIES. THIRTY-SIX TEACHERS AND 958 FIRST-GRADE PUPILS FROM SANGER AND CLOVIS, CALIFORNIA, PUBLIC SCHOOLS WERE THE TOTAL SAMPLE. SANGER PUPILS USED METHOD A AND CLOVIS PUPILS USED METHODS B AND C. FOLLOWING THE 140-DAY EXPERIMENTAL PERIOD, THE READING ABILITIES OF ALL THE CHILDREN WERE MEASURED AND THE RESULTS STATISTICALLY ANALYZED. THE SUPERIORITY OF A HIGHLY DIFFERENTIATED PROGRAM OF READING INSTRUCTION OVER A DEVELOPMENTALLY ORIENTED BASAL READER PROGRAM IS CLEARLY APPARENT BY STATISTICALLY SIGNIFICANT DIFFERENCES, FAVORING GROUPS B AND C ON ALL CRITERION MEASUREMENTS. (GC)

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Evaluation of Level Designed Visual-Auditory and Related Writing Methods of Reading Instruction in Grade One

Cooperative Research Project 2650

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University of Minnesota
Minneapolis, Minnesota

1966

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CHAPTER I

INTRODUCTION

The experimental study evaluated in this report was one of twenty-seven studies sponsored by the United States Office of Education in a major attempt to analyze the reading achievements of first grade pupils instructed in various reading curriculum programs.

The instances of research in grade one reading have for the most part been quite provincial investigations of the single treatment type. Though the number and type of grade one reading programs are extensive and advocates of individual methods have been enthusiastic regarding their merits, little research has been effected comparing these diverse methods under controlled experimental conditions.

The Cooperative First Grade Research Project was a first attempt to critically examine the effects of certain methods of reading instruction on grade one in various research centers throughout the nation. This study was conducted in the Central San Joaquin Valley of California.

Statement of the Problem

Of the twenty-seven projects involved in this cooperating research, the project reported here was unique to the extent that all three treatment groups under study were instructed using similar basal reading materials. The variables to be investigated were the instructional methods employed by teachers using these similar developmental materials.

The major questions to be answered in this research were

> Which of three methods of instruction using similar basal reader content produces higher skills achievement at the end of grade one?
>
> On the basis of these three methods of instruction, do reading achievement differences exist between boys and girls within and among the treatment groups?
>
> Are there differences in the reading achievements of pupils in the three treatment groups on the basis of intelligence levels?

CHAPTER II

RESEARCH PROCEDURES

Cooperative Research Procedures

The concept of cooperative research on curriculum design and instructional practice is new to public school experimentation. Of the many factors which have retarded the development of large scale national research efforts in education, four have been particularly difficult to overcome

Disagreement concerning both the type and the priority of educational problems to be investigated

Difficulty in assembling research investigators to discuss guidelines for cooperative ventures

Complexity of experimental research in public schools

Anticipated difficulties in finding agreement on common measurements, control of time variables and statistical analysis of results.

With the financial support of the Office of Education a Coordinating Center for the twenty-seven individual projects was established at the University of Minnesota under the direction of Dr. Guy L. Bond. In an effort to coordinate these various projects a May 1964 meeting was held in Minneapolis to discuss the various problems inherent in cooperative research and to plan specific research guidelines for individual projects. As a result of these deliberations certain controls were placed on all projects to provide opportunities for common analysis of data.

At that planning conference the following measures were selected as control measures to be administered to all participating grade one pupils in September, 1964

Metropolitan Readiness Tests[1]

Murphy-Durrell Readiness Test[1]

Thurstone Visual Discrimination Test[1]

Pintner-Cunningham Intelligence Test, Form B[1]

Detroit Word Recognition Test[1] (Pupils reading on entrance to Grade One)

and to plan specific research guidelines for individual projects.

In addition to the selection of standardized instruments for control purposes additional attention was given to procedures for obtaining relevant information on pupil, teacher and community characteristics.

Further recommendations resulting from the first Project Directors meeting concerned the selection of appropriate criterion variables to be administered 140 days after the final control measurements. The following measure was selected for administration to all pupils in all research projects

Stanford Achievement Test, Primary I Battery[2]

and the following measures were selected for administration to a random sample of fifty pupils from each separate treatment group within each project

Gilmore Oral Reading Test, Form A[3]

Gates Word Pronunciation Test[4]

---

[1] Harcourt, Brace and World, New York, New York.

[2] Ibid.

[3] Ibid.

[4] Ibid.

Karlsen Spelling List (Appendix A)

Fry Spelling List (Appendix A_1)

Written Language Measure (Appendix A_2)

A second Project Directors meeting was held in Minneapolis in December 1964 to discuss common problems related to test administration, experimental procedure and data card format.

Specific USOE 2650 Procedures

Three treatment groups were used in the conduct of this investigation.

Treatment Group A:

The instructional procedures utilized in Group A classrooms were those specified in the Teachers Manuals of the Ginn Basic Reading Series.[5]

The five books specified for pupil use in Treatment Group A were

My Little Red Story Book
My Little Green Story Book
My Little Blue Story Book
Little White House
On Cherry Street

An orientation program was conducted to outline procedures for effective use of this reading series although the materials had been used since 1960. As a consequence, teachers of Treatment Group A were thoroughly familiar with the Ginn instructional materials and suggested procedures for their use.

---

[5] David Russell and others, Ginn Basic Readers, Boston: Ginn and Company, California State Series, 1957.

Common Instructional Provisions: Treatments B and C

It was the intent of this study to examine the effectiveness of certain methodologies used with similar reading materials. Certain general provisions for differentiation of instruction were followed by classroom teachers in Treatment Groups B and C.

Provisions for Levels of Ability: Pupils of Treatment Groups B and C were immediately grouped on the basis of results of the Durrell-Murphy Readiness Test and general social factors. Basal reading materials for oral reading were adjusted on the basis of instructional level. Silent reading materials were adjusted on the basis of independent reading level.

Provisions for Individual Progress Rate: Pupils of Treatment Groups B and C proceeded through basal reading materials at a rate commensurate with vocabulary and comprehension mastery. An individualized reading program (Appendix B) was incorporated into the developmental program for those pupils who demonstrated superior reading skills. There were no provisions made for use of higher level basal materials for instructional purposes.

Provisions for Sub-Skills Weaknesses: There were immediate instructional provisions made for pupils deficient in the following letter knowledge skills (Appendix B_1)

Ability to match letters, upper and lower case
Ability to recognize letters shown, UC, LC
Ability to recognize letters named, UC, LC
Ability to relate upper to lower case letters
Ability to recognize letter sounds.

Flexible sub-grouping was employed to overcome word recognition deficiencies on the basis of recorded errors during oral reading for diagnosis periods.

Provisions for Encouraging Initiative-Thinking Abilities: Treatment Group B and C pupils participated in an individualized reading program following word recognition and comprehension mastery of grade one basal materials. Independent self correcting applied phonics materials (Appendix B_2) were used for pupils deficient in auditory discrimination abilities. Self correcting study guides of increasing difficulty stressing mastery of main idea and logical sequence skills were used during silent reading activities (Appendix B_3).

Provisions for Improving Quantity and Quality of Pupil Participation in Reading Activities: The instructional procedures employed by Treatment Group B and C teachers utilized every pupil response techniques for word analysis practice. Paired pupil practices were used for quick recognition, phrase reading and applied phonics drill. Pupil teams of two and three were used for oral reading-practice activities.

Unique Instructional Provisions: Treatment B

The Treatment B classroom teacher used the Ginn Basic Readers for story content only. In lieu of the grade one developmental skills program suggested in the Teachers Manual, an intensive skills program was utilized. The following instructional patterns were used

Visual discrimination of letter forms: Initial reading instruction focused on mastery of direct watching of upper and lower case letters, ability to match letters shown and ability to relate upper and lower case letters (Appendix B_1).

Auditory discrimination of letter sounds: Subsequent reading instruction emphasized mastery of ability to identify letters named, ability to name the letters, and ability to hear the separate sounds in words.

Increasing the amount and quality of reading instruction in a programmed levels design (Appendix B_4)

Vocabulary development (three levels)
Quick recognition--phrase reading (four levels)
Oral reading--diagnosis (specific recording procedure)
Oral reading--practice (five levels)
Silent reading (five levels)

Unique Instructional Provisions: Treatment C

The reading procedures specified for the Treatment B population were similarly employed by Treatment C classroom teachers. In addition to these experimental reading techniques, a written language program following a ten level design was implemented in Treatment C classrooms (Appendix C).

Instructional Time Factors

By agreement, each of the twenty-seven individual projects was of 140 days duration from the final control variable testing in September 1964 to the initial criterion variable administration, May 1965.

Instructional classroom time in reading was more difficult to control among the treatment groups within individual projects. The three treatment groups of USOE 2650 spent 400-500 minutes per week in reading and related language activities.

Two of the three treatment groups, B and C, were enrolled in first grade classrooms on double session, a circumstance not unusual in California schools--though not anticipated in the research design.

Selection of the Populations

Communities

This study was conducted in Fresno County, California, a rich agricultural area of the Central San Joaquin Valley. The treatment groups were comprised of the entire 1964 first grade populations of the Clovis and Sanger Unified School Districts located in adjacent communities. These communities are rather typical of those found in this Valley area stretching from Bakersfield in the South to Sacramento in the North. The communities could be described as urban places of approximately 6,000 population serving a large farm area. Because of the high percentage of farm laborers, the median income in the communities is between $1,000 and $2,000. The median years education according to the 1960 Census report was eight years of formal schooling. The cost per pupil in average daily attendance was the same for both communities used in the research project, $600 to $699. Though the area is rich in agricultural resources, the schools are conservative in philosophy and curriculum design. Further, approximately one-third of the school population in Fresno County is Mexican-American with the percentage higher in the more rural areas.

Table I indicates the ethnic classes of the 1964 grade one pupils of Sanger and Clovis, California.

Ethnic Class

	Sanger	Clovis	
Treatment Group	A	B	C
Category			
White	244	234	215
Mexican	104	62	66
Indian (American)	2	4	5
Negro		3	1
Oriental	10	4	4
n =	360	307	291

The reading achievements of the population to be analyzed in this research will not then, on review of Table I, be those of a typical population. For a sizable portion of this population learning to read was a second formal language experience, the first being learning to communicate in English.

Schools, Treatments, Teachers

The substantial nature of this research investigation required that all first grade classrooms in all elementary schools of Sanger and Clovis be used. There were a total of 13 classrooms in Sanger to comprise the treatment A population, 12 Clovis classrooms comprising treatment group B and another 11 Clovis classrooms comprising the treatment C population.

For the Clovis Schools the teachers were randomly assigned to the treatment groups within each geographic school area and pupils randomly assigned to the treatment classrooms by the building principal of each school.

Table II indicates the length of the school day for the grade one pupils of the three treatment groups.

Length of School Day

Treatments	A	B	C
3 - 3.5 hours		226	214
3.5 - 4.0 hours	360	81	77

Because of the double session scheduling, pupils of Treatment Groups B and C spent an average of one-half hour less per day in school.

Table III indicates the first grade class size by separate treatment group.

Class Size

	Mean	SD	Range	n
Treatment Group A	30.9	1.93	27 - 35	360
B	29.0	2.08	26 - 33	308
C	29.2	2.91	26 - 35	291

Table IV indicates the availability of library services to pupils within schools of each treatment group.

Library Services

Treatment Group	A	B	C
Library service available	140	203	191
No school library	220	104	100

In general, the pupils of treatment groups B and C had access to library services to a more substantial degree than did pupils in the A population.

Tables V to IX indicate the characteristics of the first grade teachers involved in this research. All of these teachers were women, all were fully certificated by the California State Department of Education and all had earned AB degrees from accredited colleges. No teachers in the study had received the MA degree.

Table V indicates the chronological age data of the first grade teachers of Treatment Groups A, B and C.

Teacher Age

	Mean	SD	Range	n
Treatment A	38.5	12.5	22 - 62 years	13
B	39.2	13.6	21 - 60 years	12
C	40.1	10.3	25 - 54 years	11

Table VI indicates the total number of years teaching experience of the Treatments A, B and C teachers prior to the 1964-65 experimental year.

Teaching Experience

	Mean	SD	Range	n
Treatment A	6.80	6.20	1 - 19	13
B	10.8	10.54	0 - 36	12
C	8.83	5.19	0 - 20	11

Table VII indicates the total number of years of first grade teaching experience of Treatments A, B and C teachers prior to the research year.

Grade One Teaching Experience

	Mean	SD	Range	n
Treatment A	4.85	4.39	0 - 13	13
B	7.77	7.85	0 - 27	12
C	5.29	4.75	0 - 17	11

The first grade teachers involved in this research varied little on the measured characteristics among treatment groups. There were, however, some experience advantages seemingly favoring Treatment B teachers. The thirty-six years' experience of one teacher accounted for these differences.

All of the thirty-six teachers participated for the duration of the experiment. The average number of teacher absences for the 140 day experiment was three.

Of the thirty-six teachers involved in this research, twenty-five were married and had an average of two children. Four of the teachers were single, and seven were widowed or divorced.

In addition to the descriptive data regarding the first grade teachers, two highly subjective ratings of attitude and teaching efficiency were conducted.

The San Diego Teacher Attitude Inventory[6] was administered in September of the experimental year. This instrument purportedly measures teacher sensitivity with regard to three approaches to the teaching of reading

- A basic (developmental) approach
- An individualized (library) approach
- A language experience approach

Table VIII indicates the mean scores of Treatment Groups A, B and C classroom teachers with regard to approach preference as measured by the San Diego Attitude Scale.

Approach Preference, SDAS

		Mean Scores	
	Basic	Individualized	Language Experience
Treatment A	49.8	35.5	36.9
B	47.4	41.5	31.4
C	46.1	41.0	29.3

---

[6] San Diego County Schools Office, San Diego, California.

In general, teachers in all three treatment groups tended toward a basic or developmental approach. This is not surprising in that the geographical area served by these schools is rural-farm and most California communities use the state adopted materials which are developmental in type.

An attempt was made to evaluate the instructional competence of individual classroom teachers of the three treatment groups. This rating was accomplished through the use of a subjective scale (Appendix A_3) in three areas of competence

- class structure
- extent of class participation
- awareness of and attention paid to individual needs of pupils.

Four separate ratings were obtained on each classroom teacher, one each by the Project Director, the Research Assistant who supervised the classrooms, the Elementary Coordinators (Clovis and Sanger) and the school Principal. Based on an average of the scores in each of the three areas of competence,

Table IX presents subjective assessment of overall teacher competence based on an average of four separate ratings.

Overall Teacher Competence

		Mean Rating
0 - Incompetent	Treatment Group A	2.21
1 - Poor	B	2.65
2 - Adequate	C	2.26
3 - Good		
4 - Superior		

Schedule of Research Procedures

Orientation Program

Prior to the beginning of the research year, a series of orientation meetings was held for administrators and teachers involved in this experimentation. Since the conduct of this study did not require new reading curriculum materials, teachers in all treatment groups were thoroughly familiar with the content and skills sequence of classroom reading materials.

The experimental variables under investigation in this research were the methods and techniques used by classroom teachers of the three treatment groups (Appendices B, C). It was necessary, therefore, to specifically instruct teachers of Treatment Groups B and C in the unique methodology to be employed. This was accomplished in a two day workshop in August 1964.

Testing Program

The cooperative aspects of this research as part of a national grade one reading research project required the use of common control and criterion measurements and a uniform experimental period of 140 days.

To be compatible with these guidelines the four control measures were administered September 22 - September 29, 1964.

The major criterion measure, two individual project written language measurements and the four measurements obtained from a randomly selected population of 50 pupils from each treatment group were obtained May 17 - May 27, 1965.

The tests were divided into sections for one-half hour administration and no more than one section was given on any day.

An elaborate and exacting time schedule for these measurements was accomplished by the Research Assistant. Copies of the total testing program were distributed to all administrators and teachers with instructions as to procedures to be followed during the testing period.

Test administration was conducted in one-half hour sittings and no more than one testing was accomplished on any one day.

An intensive effort was made to test absent pupils individually or in small groups on alternate days and complete data on an abnormally high percentage of the treatment populations was obtained.

All measurements were made by a specially trained test team of ten experienced primary grade teachers voluntarily not in service during the 1964-65 year. The regular classroom teacher assisted in the supervision of her pupils during the test periods.

All tests were hand corrected by the research test team and every fifth test was rescored by an alternate team member.

The testing program was most efficiently conducted and the results obtained were the most objective ones possible in a large scale testing program of this type.

Supervision of the Research

There were two types of supervisory activities employed in this research. All three treatment groups had the supervision of a building principal and an elementary coordinator. Treatment Groups B and C shared this coordination service. In addition, Treatment Group A had visits from the Fresno County Schools supervisory staff as part of their normal procedure.

The Project Director's activities included weekly visits to the administrators of all three treatment groups and weekly conferences with the two elementary coordinators.

The Research Assistant provided instructional assistance primarily to teachers in the treatment C group. These visits were at the request of the classroom teacher and were primarily directed toward starting independent reading programs and providing assistance with the writing materials used in Treatment C classrooms.

During the conduct of this research the Project Director and Research Assistant cooperated with many local school districts in the Central California area by providing information regarding the overall objectives of the national research efforts. The methods under evaluation and specific USOE 2650 research procedures were explained. Actual experimental teaching techniques were demonstrated.

The resources of the Research Center, including samples of educational materials and instructional guides, were made available to visiting school personnel. Invitations to speak at county conferences and state education agencies provided opportunities to discuss the implications of this national research to curriculum design and testing programs in first grade reading instruction.

Through local PTA and service club presentations, parents and interested citizens were informed regarding the intents of the national research and the importance of such research in improving school service.

CHAPTER III

ANALYSIS OF THE DATA

Descriptive Analysis

It was the purpose of this research to evaluate the effectiveness of three methods of first grade reading instruction using similar basal material.

Treatment Group A followed the skills sequence and instructional procedures outlined in the Teachers Manual of the Ginn Basic Series.

Treatment Group B used the Ginn Basic Readers for story content only, and followed the instructional procedures outlined in Appendix B.

Treatment Group C used the Ginn Basic Readers for story content only and followed the instructional procedures outlined in Appendices B and C.

To evaluate the effectiveness of these experimental variables on the reading achievements of first grade pupils, a total of seven common measurements and four random population measurements were made

September, 1964

Metropolitan Readiness Tests, Form A
Pintner-Cunningham Primary Test, Form A
Murphy-Durrell Diagnostic Readiness Test
Thurstone Pattern Copying Test

May, 1965

Total Population Measurements

Stanford Reading Achievement Test, Primary I Battery
Restricted Stimulus Writing Measure
Unique Stimulus Writing Measure

Random Population Measurements

Gilmore Oral Reading Test
Fry Test of Phonetically Regular Words
Gates Word Pronunciation Test
Karlsen Phonemic Word Test

For the statistical tables which follow, the pupil populations were

Treatment Group A n = 360
B n = 308
C n = 291

Table X indicates the mean chronological ages, in months, of the grade one pupils, Treatments A, B and C.

Chronological Age

	Mean	SD	Range
Treatment Group A	80.3	8.04	70 - 99 mos.
B	77.8	5.12	70 - 99 mos.
C	77.4	6.95	67 - 95 mos.

Table XI indicates the mental age, in months, of grade one pupils Treatments A, B, and C on the basis of obtained scores, Pintner-Cunningham Primary Test, Form A, September 1964.

Mental Age

	Mean	SD	Range
Treatment Group A	65.6	12.16	34 - 111
B	65.9	12.83	44 - 121
C	67.9	14.82	44 - 164

Table XII indicates the raw scores of the separate treatment groups obtained through the September 1964 administration of the Pintner-Cunningham Primary Test.

Raw Score, Pintner-Cunningham

	Mean	SD	Range
Treatment Group A	31.9	10.44	3 - 53
B	32.8	9.22	4 - 55
C	33.6	9.72	1 - 56

Review of Tables X - XII indicates that the population used in this research was significantly below the normal range of intelligence as derived from converting raw score to IQ.[1]

Admittedly these relatively low IQ scores were influenced by at least two factors. The number of Spanish language oriented pupils attending these San Joaquin Valley schools undoubtedly affected mean IQ computations. The Pintner-Cunningham test was generally the first test administered in the control variable sequence; unquestionably this time of test factor similarly affected scores.

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[1] Raw score to IQ conversion table, June 1965 Harcourt, Brace and World, New York, New York.

Table XIII indicates pupil participation in various time categories of pre-first grade formal learning experiences.

Pre-First Grade Experiences

Categories	0	No kindergarten, pre-school or vacation bible school experience
	1	Less than 20 half days total experience
	2	21 half days to 100 half days experience
	3	101 to 200 half days experience

Categories	0	1	2	3
Treatment Group A	18		2	340
B	3		6	298
C	7	1	1	282

Most of the pupils participating in this research attended kindergarten for at least 100 half day sessions.

Table XIV indicates average class populations for the first grades of Treatments A, B and C.

Class Size

	Mean	Range
Treatment Group A	29.5	22 - 34 pupils
B	28.1	24 - 33 pupils
C	28.1	27 - 30 pupils

Table XV presents mean number and range of absences of first grade pupils, Treatments A, B and C.

Pupil Absences

	Mean	Range
Treatment A	9.2	0 - 70 days
B	9.0	0 - 40 days
C	7.6	0 - 47 days

Statistical Analysis

A three way analysis of variance was performed on the fourteen subtests of the control measures, the eleven subtests of the criterion measures and the five subtests administered to a randomly selected population within each of the three treatment groups.

The pupils were grouped by reading treatment, by sex and by ability level as determined by raw score on the Pintner-Cunningham Primary Ability Test.

Category	Raw Score	IQ
I	41+	100+
II	36-40	92-99
III	31-35	85-91
IV	30-	84-

The pupil was the experimental unit and the program used in the analysis was a University of Minnesota modification of a general linear hypothesis program.[2]

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[2] R. Darrell Bork, Numerical Analysis Center, University of Minnesota.

Control Variable Analysis

Tables XVI to XLIV present the analysis of variance on the basis of the fourteen subtests in the control variable sequence.

In addition to their control significance, the analysis presented represents a statistical evaluation of two programs of kindergarten experiences conducted prior to the experimental year.

Treatment Group A pupils participated in the kindergarten program outlined in the Fresno County Curriculum Guide.[3] It is difficult to define the classroom instructional components of curriculum programs even when an attempt is made to experimentally control such variables. It would be fair to say, however, that Treatment Group A pupils participated in a more traditionally oriented kindergarten program.

The characteristics of the kindergarten program provided in schools attended by the Treatment A population included formal and informal oral language experiences, rhythms, storytelling, coloring and related art activities and classroom play activities with toys and manipulative devices. Outdoor play activities, using swings, slides and various climbing apparatus, were regularly included in the daily schedule.

Treatment Groups B and C pupils participated in these same traditional kindergarten activities but a letter emphasis program (Appendix B_1) was gradually introduced as pupils developed attention and persistence abilities. As the kindergarten program of the Treatment A group could modestly be categorized as a traditional informal program, the pre-experimental year program for Treatment Groups B and C could be categorized as more formal and structured: but formal and structured in certain letter readiness areas only.

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[3] Office of the County Superintendent of Schools, Fresno County, California, 1961.

As statistical controls permitted the use of covariance techniques, which in fact were accomplished, the presentation of the data regarding the achievements of these three treatment populations on the control variables seems especially pertinent in light of subsequent analysis of the criterion variable achievements.

Table XVI presents the cell frequencies used in the three way analysis of variance of the 14 subtests of the control measurements conducted in September 1964.

Cell Frequencies

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	35	40	19	31	36	38
II	42	43	40	43	28	35
III	38	32	42	30	29	27
IV	66	64	53	48	51	46

Review of this table indicates the high frequency of subjects in the IQ level IV category. Conversion of raw score to IQ using the mean CA of 6.5 years yields quotients of 84 and below, significantly inferior to the normal range.

Table XVII presents the cell means of pupil scores in the identification of phonemes, Murphy-Durrell Diagnostic Readiness Tests, September 1964 administration (48 possible).

Phoneme Identification - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	34.08	38.55	41.26	40.41	37.94	43.00
II	25.54	30.67	32.60	32.93	34.60	32.88
III	24.02	26.65	27.26	29.80	29.73	31.51
IV	14.12	14.48	16.67	17.39	18.76	21.17

Table XVIII presents the analysis of variance of pupil scores, Phoneme Identification, Murphy-Durrell Diagnostic Readiness Tests

Phoneme Identification - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	4761.57	4761.57	33.77**
T_2 B vs C	1	857.76	857.76	6.08*
IQ	3	65701.14	21900.38	155.32**
Sex	1	884.20	884.20	6.27*
Treatments x IQ				
T_1 x IQ	3	213.94	7.13	0.05
T_2 x IQ	3	108.56	36.19	0.26
Treatments x Sex				
T_1 x Sex	1	0.10	0.10	0.00
T_2 x Sex	1	60.31	60.31	0.43
IQ x Sex	3	186.58	6.22	0.04
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	336.36	112.12	0.80
T_2 x IQ x Sex	3	353.00	117.67	0.83
Error	932	131412.00	141.00	

Levels of significance ** 1%
* 5%

In the analysis above, combined Treatments B and C were significantly superior to the Treatment A population on phoneme identification. Treatment C scores were significantly superior to the Treatment B phoneme scores. This latter difference is difficult to explain since B and C pupils were randomly assigned to treatment classrooms.

Females were significantly superior to males in all three Treatment Groups.

Since this test measures pupil ability to identify separate sounds in spoken words, a skill highly correlated with reading success, it appears that Treatments B and C pupils were more adequately prepared for formal reading instruction than were their Treatment A counterparts.

Unquestionably the auditory discrimination training (Appendix B_1) of the kindergarten program significantly affected these pupil scores.

Table XIX presents the cell means of pupil scores on ability to identify upper case letters named, Murphy-Durrell Tests (26 possible)

Letters Named, Upper Case - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	21.25	22.25	24.63	25.38	24.44	25.76
II	16.90	20.06	22.15	22.41	22.60	23.11
III	16.10	16.75	20.73	22.40	21.96	22.14
IV	9.84	10.89	14.86	15.20	17.64	17.82

Attention is directed to the very high mean scores attained by the B C groups. The letter readiness program of the kindergarten year undoubtedly occasioned these achievements.

Table XX presents the analysis of variance of pupil scores on ability to identify upper case letters named, Murphy-Durrell Tests.

Letters Named, Upper Case - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	5540.39	5540.39	132.86**
T_2 B vs C	1	301.40	301.40	7.23**
IQ	3	13511.26	4503.75	108.00**
Sex	1	195.94	195.94	4.70*
Treatments x IQ				
T_1 x IQ	3	403.18	134.39	3.22*
T_2 x IQ	3	52.07	17.35	0.42
Treatments x Sex				
T_1 x Sex	1	25.96	25.96	0.62
T_2 x Sex	1	0.84	0.84	0.02
IQ x Sex	3	27.65	9.22	.22
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	19.25	6.42	0.15
T_2 x IQ x Sex	3	78.31	26.10	0.63
Error	932	38864.4	41.7	

Levels of significance ** 1%
* 5%

Combined Treatment Groups B and C were significantly superior to the Treatment A Group on the ability to identify upper case letters named. The C group was similarly superior to the B group though for practical purposes the mean one point score difference is not meaningful.

Females were significantly superior to the males, though again, for practical purposes, the 1.2 mean score advantage does not appear meaningful.

The significant interaction in the T_1 contrast, Treatments x IQ level occurs as a result of the relatively high achievements of the Levels III and IV groups of Treatments B and C. Apparently the letter readiness program of the kindergarten year markedly influenced the letter knowledge achievements of low ability pupils.

Table XXI presents the cell means of pupil scores on the ability to identify lower case letters named, Murphy-Durrell Tests (26 possible).

Letters Named, Lower Case - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	16.80	18.52	21.52	22.45	21.94	23.15
II	12.73	15.16	17.80	18.48	19.39	19.91
III	12.92	12.40	15.11	16.36	18.41	17.66
IV	8.06	8.37	11.26	11.47	14.13	14.17

Table XXII presents the analysis of variance of pupil scores on ability to identify lower case letters named, Murphy-Durrell Tests.

Letters Named, Lower Case - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	4807.11	4807.11	130.27**
T_2 B vs C	1	776.62	776.62	21.05**
IQ	3	11973.90	3991.30	108.16**
Sex	1	110.13	110.13	2.98*
Treatments x IQ				
T_1 x IQ	3	109.44	36.48	0.99
T_2 x IQ	3	23.38	7.79	0.21
Treatments x Sex				
T_1 x Sex	1	2.98	2.98	0.08
T_2 x Sex	1	6.29	6.29	0.17
IQ x Sex	3	83.54	27.84	0.75
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	13.98	4.66	0.13
T_2 x IQ x Sex	3	56.91	18.97	0.51
Error	932	34390.8	36.9	

Levels of significance ** 1%
* 5%

Treatment Groups B and C were significantly superior to Treatment Group A on ability to identify lower case letters subtest of the Murphy-Durrell.

Treatment Group C pupils were significantly superior to the Treatment B group pupils.

Females of all treatment groups performed significantly better on this measure than did the males.

Table XXIII presents the cell means of pupil scores on total score, letter knowledge, Murphy-Durrell Tests (52 possible).

Total Score, Letter Knowledge - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	38.00	40.72	46.15	47.83	46.38	48.92
II	30.16	34.76	39.45	40.90	41.85	43.02
III	29.02	29.15	35.83	38.76	40.37	39.81
IV	17.75	19.26	26.15	26.68	31.78	31.97

Table XXIV presents the analysis of variance of pupil scores on total score, letter knowledge section, Murphy-Durrell.

Total Score, Letter Knowledge - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	20648.74	20648.74	143.39**
T_2 B vs C	1	2101.18	2101.18	14.59**
IQ	3	50619.04	16873.01	117.17**
Sex	1	587.61	587.61	4.08*
Treatments x IQ				
T_1 x IQ	3	723.64	241.21	1.67
T_2 x IQ	3	66.48	22.16	0.15
Treatments x Sex				
T_1 x Sex	1	7.54	7.54	0.05
T_2 x Sex	1	16.93	16.93	0.12
IQ x Sex	3	164.98	54.99	0.38
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	20.30	6.77	0.05
T_2 x IQ x Sex	3	190.73	63.58	0.44
Error	932	134208.	144.0	

Levels of significance ** 1%
* 5%

Combined Treatment Groups B and C were significantly superior to the Treatment A Group on total letter knowledge, Murphy-Durrell. Treatment Group C was significantly superior to Treatment Group B. Girls were significantly superior to boys.

Table XXV presents the cell means of pupil scores on the learning rate test, Murphy-Durrell Tests, September, 1964 administration (18 possible).

Learning Rate - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	11.14	11.95	16.57	14.41	13.63	14.28
II	9.00	10.30	11.77	10.18	11.21	11.02
III	9.15	10.40	9.09	9.73	9.89	9.48
IV	7.56	7.07	6.79	8.02	8.17	8.06

Table XXVI presents the analysis of variance of pupil scores on the learning rate test, Murphy-Durrell Tests.

Learning Rate - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	266.23	266.23	12.32**
T_2 B vs C	1	32.45	32.45	1.50
IQ	3	4217.03	1405.68	65.08**
Sex	1	7.26	7.26	0.34
Treatments x IQ				
T_1 x IQ	3	319.55	106.52	4.93**
T_2 x IQ	3	37.60	12.53	0.58
Treatments x Sex				
T_1 x Sex	1	9.01	9.01	0.42
T_2 x Sex	1	1.75	1.75	0.08
IQ x Sex	3	14.23	4.74	0.22
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	193.87	64.62	2.99*
T_2 x IQ x Sex	3	7.39	2.46	0.11
Error	932	20131.2	21.6	

Levels of significance ** 1%
* 5%

Combined Treatment B and C pupils were significantly superior to Treatment A pupils on this measure of word recognition ability following a standard period of instruction. It is difficult to establish cause-effect relationships based on relatively uncontrolled kindergarten experiences; it would appear, however, that improved attention and persistence abilities occasioned by more formal pre-first grade experiences significantly contributed to achievement differences favoring the B-C population.

The interaction in the T_1 contrast (Treatment A vs B C), Treatments by IQ levels occurs as a result of the superior achievements of Level I and II pupils in the combined B-C populations. Pupils in Level III and IV categories of all three treatment groups made approximately similar achievements.

Table XXVII presents the cell means of pupil scores on the Thurstone Pattern Copying Test (36 possible).

Pattern Copying - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	23.02	20.92	25.68	25.96	24.91	24.86
II	20.16	19.02	21.25	18.74	21.60	19.57
III	17.05	18.06	17.73	16.86	18.79	16.77
IV	12.34	14.00	13.37	13.16	13.56	15.56

Table XXVIII presents the analysis of variance on pupil scores, Thurstone Pattern Copying.

Pattern Copying - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	338.18	338.18	10.87**
T_2 B vs C	1	143.42	143.42	4.61*
IQ	3	14245.16	4748.39	152.68**
Sex	1	18.92	18.92	0.61
Treatments x IQ				
T_1 x IQ	3	376.00	125.33	4.03**
T_2 x IQ	3	46.51	12.50	0.40
Treatments x Sex				
T_1 x Sex	1	5.29	5.29	0.17
T_2 x Sex	1	19.82	19.82	0.64
IQ x Sex	3	330.54	110.18	3.54*
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	147.32	49.11	1.58
T_2 x IQ x Sex	3	37.13	12.38	0.40
Error	932	28985.2	31.1	

Levels of significance ** 1%
* 5%

Combined Treatments B and C were significantly superior to Treatment A on this measure of pupil ability to direct copy patterns. Smaller though still significant differences favored the Treatment C population in the T_2 contrast.

Significant differences in the T_1 treatment by sex contrast are reflected in the superior achievements of Level I IQ (100+) of the B-C population.

Males in IQ Levels I and II categories were superior to the females. The difficulties in the quite subjective scoring procedures preclude further interpretation of these results.

Table XXIX presents the cell means of pupil scores on the Identical Forms section, Thurstone Visual Discrimination Tests, September 1964 administration (60 possible).

Identical Forms - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	20.11	20.50	19.36	18.90	17.13	20.52
II	17.16	16.37	16.22	17.60	17.25	16.28
III	12.36	15.12	14.45	15.66	13.55	14.48
IV	10.39	10.35	9.35	9.14	10.00	12.52

Table XXX presents the analysis of variance of pupil scores on the Identical Forms section of the Thurstone Tests.

Identical Forms - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	0.15	0.15	0.00
T_2 B vs C	1	53.31	53.31	1.31
IQ	3	11916.90	3972.30	97.36**
Sex	1	155.66	155.66	3.81
Treatments x IQ				
T_1 x IQ	3	216.40	72.13	1.77
T_2 x IQ	3	62.68	20.89	0.51
Treatments x Sex				
T_1 x Sex	1	83.53	83.53	2.05
T_2 x Sex	1	48.27	48.27	1.1831
IQ x Sex	3	87.33	29.11	0.71
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	33.14	11.05	0.27
T_2 x IQ x Sex	3	244.32	81.44	2.00
Error	932	38025.6	40.8	

Level of significance ** 1%

This measure seemingly differentiates visual discrimination abilities by IQ levels only with high ability pupils performing more accurately than low ability pupils.

On a 60-item measure this outcome is not surprising. Only in the number of items attempted were differences observed.

The error patterns of both high and low IQ pupils were similar.

Table XXXI presents the cell means on the Word Meaning subtest of the Metropolitan Readiness Tests, September 1964 administration (19 possible).

Word Meaning - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	8.71	7.90	10.26	9.64	10.66	10.57
II	7.04	6.72	9.12	7.48	10.28	7.37
III	7.44	7.03	8.52	6.76	7.37	7.00
IV	5.71	5.50	5.84	5.79	7.01	6.47

Table XXXII presents the analysis of variance of pupil scores on the Word Meaning subtest of the Metropolitan Readiness Tests.

Word Meaning - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	286.96	286.96	45.55**
T_2 B vs C	1	59.83	59.83	9.50**
IQ	3	1546.25	515.41	81.81**
Sex	1	129.18	129.18	20.50**
Treatments x IQ				
T_1 x IQ	3	82.88	27.63	4.38**
T_2 x IQ	3	49.77	16.59	2.63*
Treatments x Sex				
T_1 x Sex	1	26.42	26.42	4.19*
T_2 x Sex	1	.22	.22	0.03
IQ x Sex	3	54.19	18.06	2.88*
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	31.98	10.64	1.69
T_2 x IQ x Sex	3	43.73	43.73	2.31
Error	932	5871.60	6.30	

Levels of significance ** 1%
* 5%

Combined Treatments B and C were significantly superior to the A group on the Word Meaning section of the Metropolitan. Treatment C was significantly superior to Treatment B.

Males were significantly superior to females when combined treatment groups were analyzed.

The significant interaction in the T_1 treatments by IQ contrast, occurs as a result of the superior achievements of the IQ Level I and II pupils in the B-C population. The smaller though still significant interaction in the T_2 contrast, treatments by sex is occasioned by the superior achievements of the IQ Level I group of the C population.

The interaction in the sex by IQ contrast is caused by achievement differences favoring the male population in IQ Levels II, III and IV of the combined treatment populations.

From these data, it appears that evidence regarding the verbal superiority of girls on entrance to grade one is far from conclusive.

Table XXXIII presents the cell means of pupil scores on the Listening subtest of the Metropolitan Readiness Tests (14 possible).

Listening - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	11.31	10.30	11.36	11.77	11.47	11.55
II	10.23	10.27	10.25	9.67	10.50	9.94
III	10.34	8.96	9.38	8.20	8.86	9.14
IV	7.81	7.98	7.50	7.92	8.21	7.76

Table XXXIV presents the analysis of variance of pupil scores on the Listening subtest of the Metropolitan Readiness Tests.

Listening - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	0.69	0.69	0.12
T_2 B vs C	1	23.28	23.28	4.11*
IQ	3	1626.48	542.16	95.62**
Sex	1	25.01	25.01	4.41*
Treatments x IQ				
T_1 x IQ	3	60.33	20.11	3.55*
T_2 x IQ	3	4.10	1.37	0.24
Treatments x Sex				
T_1 x Sex	1	0.02	0.02	0.00
T_2 x Sex	1	1.06	1.06	0.19
IQ x Sex	3	17.63	5.87	1.04
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	9.26	3.09	0.54
T_2 x IQ x Sex	3	41.46	13.82	2.44
Error	932	5284.44	5.67	

Levels of significance ** 1%
* 5%

Treatment Group C was significantly superior to Treatment Group B on this measure. Practically, however, the .39 point difference on mean score is not meaningful.

Boys were superior to girls though the .18 point difference is not practically meaningful.

The interaction occurring in the T_1 contrast treatments by sex is caused by the superiority of the B-C population in the Level I (100+) category.

Table XXXV presents the cell means of pupil scores on the Matching section of the Metropolitan premeasure, September 1964 (19 possible).

Matching - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	10.48	11.42	11.26	11.83	11.91	12.00
II	9.73	10.20	9.97	10.41	10.53	10.14
III	8.34	8.53	8.83	9.03	9.48	9.25
IV	5.95	5.60	6.28	6.64	7.29	7.56

Table XXXVI presents the analysis of variance of pupil scores, Matching subtest of the Metropolitan Readiness Tests.

Matching - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	165.36	165.36	21.67**
T_2 B vs C	1	68.98	68.98	9.04**
IQ	3	3585.49	1195.16	156.64**
Sex	1	9.05	9.05	1.18
Treatments x IQ				
T_1 x IQ	3	35.48	11.83	1.55
T_2 x IQ	3	2.44	0.81	0.11
Treatments x Sex				
T_1 x Sex	1	4.87	4.87	0.64
T_2 x Sex	1	6.39	6.39	0.84
IQ x Sex	3	7.48	2.49	0.33
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	17.58	5.86	0.77
T_2 x IQ x Sex	3	1.19	0.40	0.05
Error	932	7111.16	7.63	

Level of significance ** 1%

Combined Treatments B and C were significantly superior to the A Treatment. The C population was significantly superior to the B population. These differences though significant are less than one point differences in terms of raw score on a 19-item measure.

Table XXXVII presents the cell means of pupil scores on the Numbers subtest of the Metropolitan premeasure (25 possible).

Numbers - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	15.68	16.02	15.42	15.58	16.27	17.10
II	13.80	13.51	12.80	13.00	14.46	12.71
III	11.78	11.40	11.50	11.73	12.37	11.51
IV	7.89	8.60	8.01	8.33	9.07	9.54

Table XXXVIII presents the analysis of variance of pupil scores on the Metropolitan Readiness Numbers subtest.

Numbers - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	12.69	12.69	0.96
T_2 B vs C	1	194.76	194.76	14.75**
IQ	3	7532.53	2510.84	190.21**
Sex	1	1.16	1.16	0.09
Treatments x IQ				
T_1 x IQ	3	20.67	6.89	0.52
T_2 x IQ	3	8.89	2.96	0.22
Treatments x Sex				
T_1 x Sex	1	16.37	16.37	1.24
T_2 x Sex	1	6.76	6.76	0.51
IQ x Sex	3	52.03	17.34	1.31
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	1.66	0.55	0.04
T_2 x IQ x Sex	3	37.55	12.52	0.95
Error	932	12302.4	13.2	

Level of significance ** 1%

Treatment Group C was significantly superior to Treatment Group B on the Numbers subtest of the Metropolitan Readiness Tests.

Table XXXIX presents the cell means of pupil scores on the Copying subtest of the Metropolitan premeasure (17 possible).

Copying - Means

Treatments	**A**		**B**		**C**	
Sex	**M**	**F**	**M**	**F**	**M**	**F**
IQ Level						
I	12.11	10.82	12.10	12.41	12.13	12.34
II	10.09	9.79	9.57	9.55	10.67	10.28
III	8.63	9.46	8.85	8.33	8.82	8.66
IV	5.72	6.76	5.43	6.87	6.19	7.69

Table XL presents the analysis of variance of pupil scores on the Copying subtest of the Metropolitan Readiness Tests.

Copying - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	14.60	14.60	1.50
T_2 B vs C	1	75.99	75.99	7.78**
IQ	3	4033.20	1344.40	137 75**
Sex	1	25.00	25.00	2.56
Treatments x IQ				
T_1 x IQ	3	32.03	10.67	1.09
T_2 x IQ	3	21.29	7.09	0.73
Treatments x Sex				
T_1 x Sex	1	0.76	0.76	0.78
T_2 x Sex	1	0.07	0.07	0.00
IQ x Sex	3	122.37	40.79	4.18*
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	36.45	12.15	1.24
T_2 x IQ x Sex	3	6.96	2.32	0.24
Error	932	9096.32	9.76	

Levels of significance ** 1%
* 5%

Treatment Group C was significantly superior to the Treatment B population.

The significant interaction in the IQ by sex contrast is caused by the superiority of the boys in IQ categories I and II and the superiority of the girls in categories III and IV.

Table XLI presents the cell means of pupil scores on the Alphabet subtest of the Metropolitan premeasure (36 possible).

Alphabet- Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	11.97	11.45	14.68	14.74	14.27	15.47
II	8.95	10.69	12.70	12.81	14.00	13.45
III	8.68	8.87	11.83	12.66	12.96	12.25
IV	4.93	5.67	8.39	7.93	10.25	10.65

Table XLII presents the analysis of variance of pupil scores on the Alphabet subtest, Metropolitan Readiness Tests.

Alphabet - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	3003.42	3003.42	213.00**
T_2 B vs C	1	242.52	242.52	17.20**
IQ	3	4801.66	1600.55	113.51**
Sex	1	22.16	22.16	1.57
Treatments x IQ				
T_1 x IQ	3	103.96	34.65	2.46
T_2 x IQ	3	33.61	11.20	0.79
Treatments x Sex				
T_1 x Sex	1	11.25	11.25	0.80
T_2 x Sex	1	0.40	0.40	0.03
IQ x Sex	3	4.58	1.53	0.11
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	30.09	10.03	0.71
T_2 x IQ x Sex	3	76.68	25.56	1.81
Error	932	13141.2	14.1	

Level of significance ** 1%

Combined Treatment Groups B and C were significantly superior to the A Group in their ability to recognize letters named. Treatment Group C was significantly superior to the Treatment B Group. The substantial mean score differences undoubtedly reflect the outcomes of the letter readiness program of the B-C kindergarten year.

Table XLIII presents the cell means of pupil achievements on the subtests of the Metropolitan Readiness Tests as reflected in the Total Score (130 possible).

Total Score - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	70.54	67.77	74.68	75.74	76.75	78.78
II	59.76	61.46	64.55	63.39	70.46	65.00
III	54.94	54.37	59.16	57.06	59.89	57.55
IV	38.43	40.07	41.45	43.14	47.74	49.26

Table XLIV presents the analysis of variance of pupil achievements, Total Score, Metropolitan Readiness Tests.

Total Score - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	8175.27	8175.27	61.01**
T_2 B vs C	1	3285.20	3285.20	24.52**
IQ	3	128706.61	42902.20	320.16**
Sex	1	3.94	3.94	0.03
Treatments x IQ				
T_1 x IQ	3	496.31	165.44	1.23
T_2 x IQ	3	311.59	103.86	0.77
Treatments x Sex				
T_1 x Sex	1	183.03	183.03	1.36
T_2 x Sex	1	13.27	13.27	0.10
IQ x Sex	3	425.64	141.88	1.06
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	423.99	141.33	1.05
T_2 x IQ x Sex	3	223.55	74.52	0.56
Error	932	124888.0	134.0	

Level of significance ** 1%

Combined Treatment Groups B and C were significantly superior to Treatment Group A on the basis of Total Score, Metropolitan. Treatment Group C was significantly superior to Treatment Group B.

The superiority of the B-C groups on Word Meaning, Matching and Alphabet, which skills were components of the pre-experimental year kindergarten program, accounted for the significant differences on total score achievements, Metropolitan Readiness Tests.

Criterion Variable Measurements

The criterion measurements selected for use in evaluating the reading and related language achievements in the Cooperative Research First Grade Study were

- Stanford Achievement Battery Primary I
- Written Languge Measure: restricted and unique.

In addition to these measurements obtained from the total population, other tests were administered to a randomly selected population of 50 pupils from each of the three treatment groups

- Gilmore oral reading test
- Gates word pronunciation test
- Fry test of phonetically regular words
- Karlsen phonemic word test.

These criterion measurements were accomplished in late May, 140 days after the administration of the final control measurement.

Table XLV presents the cell frequencies used in the three way analysis of variance of the five subtests of the Stanford Achievement Test, Primary I Battery.

Cell Frequencies, Stanford Analysis

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	31	38	16	28	35	35
II	38	38	36	36	25	31
III	33	27	39	28	27	25
IV	56	49	43	34	41	39

Table XLVI presents the cell means of pupil scores on the Word Reading subtest, Stanford Achievement Primary I Battery (35 possible).

Word Reading, Stanford - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	18.54	22.26	26.25	25.82	22.88	27.11
II	16.15	18.84	21.72	20.77	21.44	20.83
III	16.45	16.88	19.46	19.71	21.55	17.72
IV	11.66	13.06	16.60	14.97	16.73	15.10
Mean Grade Placement	1.6	1.7	1.8	1.8	1.8	1.7

Table XLVII presents the analysis of variance of pupil scores on Word Reading, Stanford Achievement, Primary I Battery, May 1965 administration.

Word Reading, Stanford - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	2923.04	2923.04	94.60**
T_2 B vs C	1	7.40	7.40	0.24
IQ	3	8979.59	2993.20	96.87**
Sex	1	162.89	162.89	5.27*
Treatments x IQ				
T_1 x IQ	3	104.56	34.85	1.13
T_2 x IQ	3	7.027	2.34	0.07
Treatments x Sex				
T_1 x Sex	1	303.70	303.70	9.83**
T_2 x Sex	1	8.89	8.89	.29
IQ x Sex	3	358.89	119.63	3.87**
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	148.98	49.66	1.61
T_2 x IQ x Sex	3	213.20	71.07	2.30
Error	804	24843.6	30.9	

Levels of significance ** 1%
* 5%

Treatment Groups B and C were significantly superior to the Treatment A population on word reading ability.

Summing over all treatments, girls were superior to boys.

For the T_1 contrast treatments by sex, Treatment A girls demonstrated superior achievements when compared with boys. For combined treatments B and C, however, there were no differences in the word reading achievements of boys and girls.

The significant interaction occurring in the IQ by sex contrast results from the superior achievements of the girls in the IQ Levels I and II categories and the superiority of the boys in Levels III and IV.

In light of the IQ level of this population, the achievements of the B-C Treatment Groups are particularly significant. Similarly, the achievement of the boys is noteworthy.

Table XLVIII presents the cell means of pupil scores on the Paragraph Reading subtest, Stanford Primary I Battery (38 possible).

Paragraph Reading, Stanford - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	18.54	23.26	26.00	28.89	22.97	29.25
II	14.57	18.21	19.19	19.25	21.80	23.41
III	14.15	15.11	17.10	19.00	19.48	19.56
IV	9.37	11.36	12.48	14.14	15.00	14.74
Mean Grade Placement	1.6	1.7	1.7	1.7	1.7	1.8

Table XLIX presents the analysis of variance of pupil scores on the Paragraph Reading subtest, Stanford Primary I Battery.

Paragraph Reading - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	3922.99	3922.99	76.92**
T_2 B vs C	1	493.85	493.85	9.68**
IQ	3	15066.34	5022.11	98.47**
Sex	1	1585.57	1585.57	31.09**
Treatments x IQ				
T_1 x IQ	3	125.28	41.76	0.82
T_2 x IQ	3	252.11	84.04	1.65
Treatments x Sex				
T_1 x Sex	1	46.66	46.66	0.91
T_2 x Sex	1	10.73	10.73	0.21
IQ x Sex	3	419.07	139.69	2.74*
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	226.22	75.41	1.48
T_2 x IQ x Sex	3	0.03	0.01	0.00
Error	804	41004.0	51.0	

Levels of significance ** 1%
* 5%

Treatment Groups B and C were significantly superior to the Treatment A Group. Treatment C pupils were significantly superior to Treatment B pupils.

Girls were significantly superior to boys in the analysis using combined treatments.

Particularly significant were the achievements of girls in the Level I IQ category, Treatments B and C.

Table L presents the cell means on the Vocabulary subtest, Stanford Achievement Battery Primary I (39 possible).

Vocabulary - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	20.90	23.18	26.43	26.67	26.42	26.62
II	19.44	20.02	23.61	20.30	24.20	20.64
III	17.87	17.59	21.66	20.07	19.40	19.40
IV	12.87	13.91	16.18	16.44	18.00	15.76
Mean Grade Placement	1.7	1.8	2.1	2.0	2.1	2.0

Table LI presents the analysis of variance of pupil scores on the Vocabulary subtest, Stanford Primary I Battery.

Vocabulary - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	2071.30	2071.30	71.42**
T_2 B vs C	1	16.71	16.71	0.58
IQ	3	3447.60	3447.60	118.88**
Sex	1	0.17	0.17	0.00
Treatments x IQ				
T_1 x IQ	3	119.90	39.97	1.38
T_2 x IQ	3	93.98	31.32	1.08
Treatments x Sex				
T_1 x Sex	1	234.63	234.63	8.09**
T_2 x Sex	1	1.04	1.04	0.03
IQ x Sex	3	209.23	69.74	2.40
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	33.96	11.32	0.39
T_2 x IQ x Sex	3	103.72	34.57	1.19
Error	804	23316.0	29.0	

Level of significance ** 1%

Treatment Groups B and C were significantly superior to the Treatment A Group.

In the T_1 contrast, Treatments B and C, boys vs girls, the boys were superior to the girls.

Table LII presents the cell means of pupil scores on the Spelling subtest, Stanford Achievement measure (20 possible).

Spelling, Stanford - Means

Treatments	**A**		**B**		**C**	
Sex	**M**	**F**	**M**	**F**	**M**	**F**
IQ Level						
I	7.45	8.94	13.37	15.28	12.48	15.65
II	4.86	6.86	10.19	10.38	11.80	12.80
III	4.12	6.40	9.23	9.39	11.48	10.32
IV	1.58	2.97	5.67	6.44	7.12	7.46
Mean Grade Placement	1.4	1.5	1.7	1.7	1.8	1.9

Table LIII presents the analysis of variance of pupil scores on the Spelling subtest, Stanford.

Spelling - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	5193.52	5193.52	224.83**
T_2 B vs C	1	268.55	268.55	11.62**
IQ	3	5222.56	1740.85	75.36**
Sex	1	488.61	488.61	21.15**
Treatments x IQ				
T_1 x IQ	3	82.55	27.52	1.19
T_2 x IQ	3	64.63	21.54	0.93
Treatments x Sex				
T_1 x Sex	1	34.30	34.30	1.48
T_2 x Sex	1	2.22	2.22	0.10
IQ x Sex	3	74.59	24.86	1.08
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	95.97	31.99	1.38
T_2 x IQ x Sex	3	16.78	5.59	0.24
Error	804	18572.4	23.1	

Level of significance ** 1%

Treatment Groups B and C were significantly superior to Treatment Group A. Treatment C pupils were significantly superior to Treatment B pupils.

Summing over all treatments, girls were superior to boys. The significant differences favoring the Treatment C population on this measure were no doubt influenced by the writing procedures employed in the Treatment C program (Appendix C).

Table LIV presents the cell means of pupil scores on the Word Study subtest, Stanford Achievement Test, Primary I Battery (56 possible).

Word Study, Stanford - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	33.58	34.34	40.50	42.75	38.80	43.25
II	29.86	32.86	35.83	34.94	36.36	37.09
III	27.06	27.85	32.38	31.96	33.33	31.08
IV	21.67	22.10	26.51	27.73	27.73	28.48
Mean Grade Placement	1.5	1.5	1.8	1.8	1.8	1.8

Table LV presents the analysis of variance of pupil scores on the Word Study subtest, Stanford Achievement Test, Primary I Battery.

Word Study - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	6479.42	6479.42	98.17**
T_2 B vs C	1	154.68	154.68	2.34
IQ	3	20125.83	6708.61	101.64**
Sex	1	561.64	561.64	8.51**
Treatments x IQ				
T_1 x IQ	3	206.53	68.84	1.04
T_2 x IQ	3	61.50	20.50	0.31
Treatments x Sex				
T_1 x Sex	1	6.84	6.84	0.10
T_2 x Sex	1	20.24	20.24	0.31
IQ x Sex	3	190.10	63.37	0.96
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	272.94	90.98	1.38
T_2 x IQ x Sex	3	47.16	15.72	0.24
Error	804	53064.0	66.0	

Level of significance ** 1%

Treatment Groups B and C were significantly superior to Treatment Group A on word study skills.

Girls were significantly superior to the boys in an analysis of combined treatment group scores.

The preceding analysis of pupil scores on the Stanford Achievement Test revealed the reading skills superiority of Treatment Group B and C pupils whose program of instruction was highly differentiated. The statistically significant differences favoring the B-C groups clearly indicate that the content of reading materials as such is not a significant variable in grade one instruction and that early intensive instruction in the various sub-skills areas of visual and auditory discrimination is clearly superior to developmental spiral methods proposed in basal reading systems.

Two writing samples (Appendix A_2) were obtained from all pupils as part of the criterion variable sequence. Tables LVI to LXIII present the statistical analysis of these measures.

Table LVI presents the cell frequencies used in the three way analysis of variance of the two writing samples obtained from Treatment Groups A, B and C.

Cell Frequencies

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	29	31	15	22	30	32
II	34	33	32	28	23	26
III	32	21	31	23	25	22
IV	47	36	32	26	36	29

Table LVII presents the cell means of percentages of pupil accuracy on the mechanics ratio scale, Restricted Stimulus Measure.

Percentage of Accuracy: Mechanics of English - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	51	57	64	76	75	82
II	47	46	67	62	75	78
III	45	54	68	60	64	68
IV	32	40	55	53	65	61

Table LVIII presents the analysis of variance of pupil accuracy on the mechanics ratio scale, Restricted Stimulus Measure.

Mechanics of English - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	72458.12	72458.12	120.56**
T_2 B vs C	1	6479.56	6479.56	10.78**
IQ	3	24595.62	8198.54	13.64**
Sex	1	2395.71	2395.71	3.99*
Treatments x IQ				
T_1 x IQ	3	162.09	54.03	0.09
T_2 x IQ	3	2624.99	874.99	1.45
Treatments x Sex				
T_1 x Sex	1	1199.90	119.90	1.10
T_2 x Sex	1	462.77	462.77	0.77
IQ x Sex	3	1611.52	537.17	0.89
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	1288.06	429.35	0.71
T_2 x IQ x Sex	3	1240.46	413.49	0.69
Error	671	403271.0	601.0	

Levels of significance ** 1%
* 5%

Treatment Group B and C pupils were significantly superior to Treatment A pupils in their ability to capitalize, punctuate and indent.

Treatment Group C pupils were significantly superior to Treatment Group B pupils. The writing activities which were part of the Treatment C program are clearly reflected in the superiority of the C population.

The analysis on the basis of sex indicated the significant superiority of the girls.

Table LVIX presents the cell means of the total number of words spelled correctly in the Restricted Stimulus Measure.

Spelling Accuracy - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	14.1	16.0	20.7	28.8	20.4	22.2
II	9.8	12.6	20.1	19.2	18.1	22.5
III	11.0	15.0	15.9	16.0	16.3	25.1
IV	9.4	10.3	11.1	17.2	12.8	19.0

Table LX presents the analysis of variance on the basis of the total number of words correctly spelled in the Restricted Stimulus Measure.

Spelling Accuracy - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	7189.63	7189.63	85.69**
T_2 B vs C	1	124.31	124.31	1.48
IQ	3	3890.63	1296.87	15.46**
Sex	1	2538.33	2538.33	30.25**
Treatments x IQ				
T_1 x IQ	3	833.55	277.85	3.31*
T_2 x IQ	3	456.48	152.16	1.81
Treatments x Sex				
T_1 x Sex	1	184.91	184.91	2.20
T_2 x Sex	1	87.56	87.56	1.04
IQ x Sex	3	118.65	39.55	0.47
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	345.38	115.13	1.37
T_2 x IQ x Sex	3	661.09	220.36	2.63*
Error	671	56296.9	83.9	

Levels of significance ** 1%
* 5%

Treatment Groups B and C were significantly superior to the Treatment A group.

Girls of the combined Treatment Groups were significantly more accurate spellers than were boys.

There were relatively slight differences in pupil performance among IQ levels in Treatment A, IQ Level III performing more accurately than Levels I or II. The achievement pattern of the B-C population was normal and the scores of these groups were markedly superior to those attained by the Treatment A Group.

Table LXI presents the cell means of the total number of running words on the Restricted Stimulus Measure.

Running Word Count - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	15.8	17.9	23.8	32.1	22.2	24.4
II	11.1	13.8	23.1	22.7	22.1	23.3
III	12.9	15.5	19.6	20.0	19.4	27.4
IV	10.5	11.6	12.7	20.5	15.9	22.5

Table LXII presents the analysis of variance of the total number of running words, Restricted Stimulus Measure.

Running Word Count - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	10657.95	10657.95	106.58**
T_2 B vs C	1	31.51	31.51	0.31
IQ	3	3915.45	1305.15	13.05**
Sex	1	2447.49	2447.49	24.47**
Treatments x IQ				
T_1 x IQ	3	1101.75	367.25	3.67*
T_2 x IQ	3	269.04	89.68	0.90
Treatments x Sex				
T_1 x Sex	1	204.00	204.00	2.04
T_2 x Sex	1	3.61	3.61	0.04
IQ x Sex	3	291.27	97.09	0.97
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	449.43	149.81	1.50
T_2 x IQ x Sex	3	512.01	170.67	1.71
Error	671	6710.0	100.00	

Levels of significance ** 1%
* 5%

Treatment Groups B and C were significantly superior to Treatment Group A on the total number of running words found in the restricted writing samples.

For combined Treatment Groups, girls wrote more than boys. There were few differences in the total word count of IQ Levels II, III and IV of the Treatment A population. The Treatment B-C distribution of total word count was quite regular.

Table LXIII presents the cell means of percentages of pupil accuracy on the mechanics ratio scale, Unique Stimulus Measure.

Unique Stimulus, Mechanics Accuracy - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	60	60	75	81	79	82
II	53	58	73	68	69	80
III	49	51	63	74	64	71
IV	47	53	59	58	58	67

Table LXIV presents the analysis of variance of pupil accuracy on the mechanics ratio scale, Unique Stimulus Measure.

Unique Stimulus, Mechanics Accuracy - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	40699.74	40699.74	69.57**
T_2 B vs C	1	1104.54	1104.54	1.89
IQ	3	22878.00	7626.00	13.03**
Sex	1	5190.41	5190.41	8.87**
Treatments x IQ				
T_1 x IQ	3	2447.70	815.90	1.39
T_2 x IQ	3	535.98	178.66	0.30
Treatments x Sex				
T_1 x Sex	1	62.42	62.42	0.11
T_2 x Sex	1	654.67	654.67	1.12
IQ x Sex	3	507.55	169.18	0.29
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	112.85	37.61	0.06
T_2 x IQ x Sex	3	2271.85	757.28	1.29
Error	671	392535.	585.0	

Level of significance ** 1%

Treatment Groups B and C were significantly superior to the Treatment A group on the basis of mechanics of written language accuracy.

For combined Treatment Groups, girls were more accurate than boys.

Table LXV presents the cell means of the total number of words spelled correctly on the Unique Stimulus Measure.

Unique Stimulus, Spelling Accuracy - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	14.8	16.0	26.6	28.2	22.5	22.6
II	10.4	11.8	21.9	17.8	17.3	20.5
III	10.4	11.7	17.6	22.5	16.2	23.9
IV	9.2	11.9	10.0	19.6	16.3	17.3

Table LXVI presents the analysis of variance of spelling accuracy, Unique Stimulus Measure.

Unique Stimulus, Spelling Accuracy - Analysis

Treatments				
T_1 A vs B C	1	9337.29	9337.29	81.91**
T_2 B vs C	1	5.98	5.98	0.05
IQ	3	4453.08	1484.36	13.02**
Sex	1	1459.88	1459.88	12.81**
Treatments x IQ				
T_1 x IQ	3	988.41	329.47	2.89*
T_2 x IQ	3	83.20	27.74	0.24
Treatments x Sex				
T_1 x Sex	1	63.95	63.95	0.56
T_2 x Sex	1	15.85	15.85	0.14
IQ x Sex	3	606.47	202.16	1.77
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	429.48	143.16	1.25
T_2 x IQ x Sex	3	780.48	260.16	2.28
Error	671	76494.0	114.0	

Levels of significance ** 1%
* 5%

Treatment Groups B and C were significantly superior to Treatment Group A on spelling accuracy.

For combined treatments, girls were significantly superior to boys.

There were minor differences among IQ Levels II, III and IV of the A population. IQ Levels II and III of Treatments B and C had comparable spelling accuracy performance.

Table LXVII presents the cell means on the total number of running words, Unique Stimulus Measure.

Unique Stimulus, Total Running Words - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	16.17	17.3	29.8	32.2	25.0	24.9
II	11.9	12.4	26.5	20.6	19.6	25.8
III	11.4	12.6	21.1	27.2	19.1	26.0
IV	10.2	12.6	12.1	26.3	19.0	19.3

Table LXVIII presents the analysis of variance of the total number of running words, Unique Stimulus Measure.

Unique Stimulus, Total Running Words - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	15571.02	15571.02	104.50**
T_2 B vs C	1	198.65	198.65	1.33
IQ	3	4323.83	1441.28	9.67**
Sex	1	1806.37	1806.37	12.12**
Treatments x IQ				
T_1 x IQ	3	776.44	258.81	1.74
T_2 x IQ	3	162.80	54.26	0.36
Treatments x Sex				
T_1 x Sex	1	205.02	205.02	1.38
T_2 x Sex	1	67.60	67.60	0.45
IQ x Sex	3	837.63	279.21	1.87
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	1082.05	360.68	2.42
T_2 x IQ x Sex	3	1555.07	518.36	3.48*
Error	671	99979.	149.0	

Levels of significance ** 1%
* 5%

Treatment Groups B and C were significantly superior to Treatment Group A on total number of running words.

For combined Treatment Groups, girls wrote more extensively than did boys.

The superiority of the girls in the IQ Level I category, Treatment Group C is reflected in the significant interaction in the T_2 contrast.

Apparently the use of a restricted stimulus or a unique stimulus did not result in writing achievement differences within the Treatment A population. More significantly, the differences among pupils in IQ Levels II, III and IV were quite minor. This suggests that these pupils had limited experiences in writing.

For Treatment Groups B and C, however, the use of a unique stimulus resulted in more elaborate use and accuracy of language.

One expected outcome of the Treatment C writing program was reflected in significant superiority in the mechanics of language.

Random Sample Measurements

A randomly selected population of at least 50 pupils was selected from each treatment group. The following measures were administered in May of the experimental year

- Gilmore Oral Reading Test
- Fry Test of Phonetically Regular Words
- Gates Word Pronunciation Test
- Karlsen Phonemic Word Test

Tables LXIX to LXXIX present the statistical analysis of these administrations.

Table LXIX presents the cell frequencies used in the three way analysis of variance of the individual reading measurements of a randomly selected population from each treatment group.

Cell Frequencies

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	8	9	5	4	8	5
II	3	11	7	9	7	5
III	6	4	8	3	4	5
IV	8	8	8	7	9	5

Table LXX presents the cell means of grade equivalent scores on word accuracy, Gilmore Oral Reading Test.

Word Accuracy, Gilmore - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	2.2	2.4	2.8	2.9	2.4	3.0
II	1.6	1.9	2.5	2.0	1.9	1.9
III	1.3	1.5	1.4	3.0	1.9	2.7
IV	.2	.5	.6	1.0	.9	.9

Table LXXI presents the analysis of variance of pupil achievements in word accuracy, Gilmore Oral Reading Test.

Word Accuracy, Gilmore - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	634.01	634.01	6.62*
T_2 B vs C	1	4.38	4.38	0.04
IQ	3	8081.57	2693.00	28.00**
Sex	1	344.27	344.27	3.59
Treatments x IQ				
T_1 x IQ	3	81.68	27.23	0.28
T_2 x IQ	3	137.63	45.88	0.48
Treatments x Sex				
T_1 x Sex	1	0.89	0.89	0.01
T_2 x Sex	1	3.56	3.56	0.04
IQ x Sex	3	390.14	130.05	1.36
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	101.02	33.67	0.35
T_2 x IQ x Sex	3	274.01	91.33	0.95
Error	132	12645.6	95.8	

Levels of significance ** 1%
* 5%

The randomly selected population drawn from Treatment Groups B and C were significantly superior to the population drawn from Group A on the basis of this measurement.

Table LXXII presents the cell means of pupil scores on reading rate, words per minute, Gilmore Oral Reading Test, randomly selected populations, May 1964.

Reading Rate, Gilmore - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	59.1	64.6	64.8	87.0	78.5	93.6
II	58.0	52.9	68.5	57.1	61.7	57.2
III	60.0	55.5	51.7	74.0	58.5	66.0
IV	36.0	33.7	37.5	58.2	42.6	48.0

Table LXXIII presents the analysis of variance of pupil scores on reading rate, Gilmore Oral Reading Test, randomly selected populations, May 1964.

Reading Rate, Gilmore - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	8710.08	8710.08	4.54*
T_2 B vs C	1	5123.90	5123.90	2.67
IQ	3	24190.27	8063.42	4.20**
Sex	1	4593.22	4593.22	2.39
Treatments x IQ				
T_1 x IQ	3	2779.78	926.59	0.48
T_2 x IQ	3	7729.92	2576.64	1.34
Treatments x Sex				
T_1 x Sex	1	4570.75	4570.75	2.38
T_2 x Sex	1	2716.42	2716.42	1.41
IQ x Sex	3	628.42	209.47	0.11
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	2859.26	953.09	0.50
T_2 x IQ x Sex	3	15253.63	5084.54	2.65
Error	132	253440.0	1920.0	

Levels of significance ** 1%
* 5%

The randomly selected population of Treatment Groups B-C was significantly superior to Treatment Group A on the basis of reading rate.

Table LXXIV presents the cell means of pupil scores on the Fry Test of phonetically regular words, random populations, May 1964.

Fry Word Test - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	4.37	5.33	11.40	8.75	12.62	10.8
II	.66	2.36	8.57	4.0	7.71	1.80
III	.83	2.00	2.25	7.6	.5	3.40
IV	.12	.37	1.75	1.28	.55	1.80

Table LXXV presents the analysis of variance of pupil scores, Fry Word Test, random populations, May 1964.

Fry Word Test - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	277.21	277.21	11.65**
T_2 B vs C	1	1.88	1.88	0.08
IQ	3	1380.76	460.00	19.00**
Sex	1	17.83	17.83	0.75
Treatments x IQ				
T_1 x IQ	3	167.76	55.92	2.35
T_2 x IQ	3	31.29	10.43	0.44
Treatments x Sex				
T_1 x Sex	1	27.62	27.62	1.16
T_2 x Sex	1	0.12	0.12	0.00
IQ x Sex	3	161.17	53.72	2.26
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	34.98	11.66	0.49
T_2 x IQ x Sex	3	73.88	24.62	1.03
Error	132	3141.6	23.8	

Level of significance ** 1%

Statistically significant differences favored the B-C random population on the basis of ability to read phonetically regular words.

Table LXXVI presents the cell means of pupil achievements on the Gates Word Pronunciation Test as scored by the randomly selected populations from each of the three treatment groups.

Gates Word Pronunciation - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	13.3	13.5	16.8	15.5	19.0	19.6
II	8.3	9.4	14.2	12.1	13.8	10.8
III	7.0	9.7	11.6	15.3	9.7	10.4
IV	3.6	4.1	7.3	7.7	6.5	8.6

Table LXXVII presents the analysis of variance of pupil scores, Gates Word Pronunciation Test, randomly selected population, May 1964.

Gates Word Pronuncation - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	410.42	410.42	16.22**
T_2 B vs C	1	5.35	5.35	0.21
IQ	3	2178.22	726.07	28.00**
Sex	1	0.19	0.19	0.01
Treatments x IQ				
T_1 x IQ	3	36.83	12.28	0.49
T_2 x IQ	3	67.11	22.37	0.88
Treatments x Sex				
T_1 x Sex	1	10.51	10.51	0.42
T_2 x Sex	1	0.23	0.23	0.01
IQ x Sex	3	52.13	17.38	0.69
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	14.84	4.95	0.19
T_2 x IQ x Sex	3	26.84	8.95	0.35
Error	132	3339.6	25.3	

Level of significance ** 1%

The Treatment Groups B and C random populations were significantly superior to the Treatment A populations on the basis of ability to recognize words.

Table LXXVIII presents the cell means of pupil scores on the Karlsen Phonemic Word Test, randomly selected populations, May 1964.

Karlsen Phonemic Word Test - Means

Treatments	A		B		C	
Sex	M	F	M	F	M	F
IQ Level						
I	9.3	9.2	16.8	14.5	16.1	16.2
II	3.3	7.2	13.0	9.2	8.7	6.4
III	4.3	5.0	5.1	14.6	6.2	7.6
IV	1.6	1.6	5.5	4.0	2.3	5.2

Table LXXIX presents the analysis of variance of scores of the randomly selected populations of Treatment Groups A, B and C, Karlsen Phonemic Word Test.

Karlsen Phonemic Word Test - Analysis

Source of Variation	Degrees of Freedom	SS	MS	F
Treatments				
T_1 A vs B C	1	413.01	413.01	11.28**
T_2 B vs C	1	10.48	10.48	0.29
IQ	3	2243.00	747.00	20.00**
Sex	1	0.98	0.98	0.03
Treatments x IQ				
T_1 x IQ	3	115.16	38.39	1.05
T_2 x IQ	3	44.15	14.72	0.40
Treatments x Sex				
T_1 x Sex	1	4.09	4.09	0.11
T_2 x Sex	1	2.61	2.61	0.07
IQ x Sex	3	111.62	37.21	1.02
Treatments x IQ x Sex				
T_1 x IQ x Sex	3	22.30	7.43	0.20
T_2 x IQ x Sex	3	212.72	70.91	1.94
Error	132	4831.2	36.6	

Level of significance ** 1%

Treatment Groups B and C were significantly superior to the Treatment A group on the basis of this word pronunciation measurement.

Analysis of Covariance

There was a difference in the instructional procedures employed by kindergarten teachers of Treatment A pupils from those utilized by kindergarten teachers of the B and C pupils.

Though these instructional procedures were not subject to experimental control, the significant differences between Treatment Group A and Treatment Group B and C achievements on all premeasures except intelligence lend support to the contention that the instructional programs had dissimilar curriculum objectives.

In addition to the analysis of variance of the criterion measures, a covariance analysis was conducted using the

- Murphy-Durrell Phoneme Test
- Total letter knowledge score
- Word learning rate

as covariates.

The results of this covariance analysis of the criterion measure

- Stanford Achievement Tests, Primary I Battery

indicate that the significant differences favoring the B and C populations remain significant at the one per cent level of confidence.

The results of the covariance analysis of the restricted and unique stimulus writing samples indicate that the differences favoring the B and C populations remain significant at the one per cent level of confidence.

The results of the covariance analysis of the random population measurements of the

- Two subtests, Gilmore Oral Reading
- Fry Phonetic Word Test
- Gates Word Pronunciation Test
- Karlsen Phonemic Word Test

indicate that the significant differences favoring the B and C populations on the three final measurements remain significant at the five per cent level of confidence.

CHAPTER IV

SUMMARY AND CONCLUSIONS

This research study evaluated the effectiveness of three methods of first grade reading instruction employing similar basal reader story content.

Treatment Group A:	The developmental skills program outlined in the Teachers Manuals accompanying the Ginn Basic Reading Series (13 classrooms)
Treatment Group B:	A levels designed program of intensive instruction in visual and auditory discrimination; word recognition, phrase reading, oral and silent reading skills (12 classrooms)
Treatment Group C:	A levels designed program of reading skills development supplemented by a levels designed program of written language (11 classrooms)

Following a 140 day experimental period in which the instructional designs were implemented in a total of 36 first grade classrooms, the reading abilities of the three treatment populations were measured and the results statistically analyzed.

Based on a review of these procedures, measurements and analyses, the following conclusions have been drawn.

1. The widely held assumption that pupils of lower ability levels and of different cultural backgrounds cannot be taught to read effectively

in the regular classroom is held to be invalid based upon the results of this study.

- Based on an interpretation of the results of the Pintner-Cunningham Intelligence Tests, the treatment populations used in this research were below the normal IQ range.
- A fourth of the pupils involved in this research were from Spanish language oriented homes from living areas that could be described as deteriorating.
- The mean grade placement of 1.9 (Stanford Achievement Primary I Battery) of Treatment Groups B and C is clear evidence of the possibilities existing for improving reading programs for assumed lower ability pupils.

2. The efficiency of early intensive formal visual and auditory discrimination programs in developing readiness to read cannot be overemphasized.
    - There were no significant differences among the treatment populations on the basis of control measurements of intelligence. number knowledge, identical forms and copying.
    - There were significant differences favoring the Treatment Groups B and C populations on control measurements of phoneme knowledge, letters named ability, letter matching and learning rate.
    - The kindergarten readiness program of the B and C populations significantly contributed to the development of two basic abilities essential for all learning

  - Attention and persistence ability
  - Ability to follow directions.

3. The superiority of a highly differentiated program of reading instruction over a developmentally oriented basal reader program is clearly apparent.
   - There were statistically significant differences favoring the Treatment Groups B and C populations on all criterion measurements.
   - The analysis of covariance using those control measurements favoring the B and C populations affected the significant superiority of the B and C groups only on two of the random sample measurements, Gilmore Oral Reading Test.
4. The assumption that girls are superior to boys in first grade reading abilities is held invalid by the results of this investigation.
   - In the differentiated instruction groups, B and C, there were no significant achievement differences between boys and girls on the criterion Stanford measurement.
   - There were no significant differences between the achievements of boys and girls, Treatment Groups B and C, on the criterion random sample measurements.
   - The expected reading skills superiority of girls over boys was apparent in the Treatment A population measurements.
   - The reading skills superiority of girls which has characterized early grade level reading investigations seems more a product of inferior teaching service to boys than a maturational advantage of girls.

Appendix A

EXAMINER'S COPY

Karlsen Phonemic Word Test

Directions:

1. Hand the PUPIL'S COPY to the pupil.
2. Say: "Read these words out loud."
3. Note the pupil's errors on this sheet.
4. Do not give the pupil a second chance, but accept immediate self-correction.
5. Continue until the child misses 5 consecutive words.
6. The score is the number of words pronounced correctly.

---

1. fit
2. tap
3. rod
4. get
5. would
6. mother
7. down
8. age
9. think
10. long
11. kind
12. yard
13. foot
14. gold
15. freeze
16. chair
17. mouth
18. carry
19. hope
20. beat
21. loaf
22. cowboy
23. furniture
24. page
25. push
26. huge
27. snowball
28. thirteen
29. scare
30. sunshine
31. gymnasium
32. join
33. usual
34. zone
35. teaspoon
36. monument
37. senior
38. flute
39. behave
40. faucet

Child's name: ______________________ Test date ____________

Examiner: ______________________ Birth date ____________

Age: ________

Appendix A_1

PHONETICALLY REGULAR WORDS ORAL READING TEST

Child's Name ______________________ Date ____________

School______________________ Room________ Code Number________

Examiner ______________ Number of words read correctly________

1. nap
2. pen
3. hid
4. job
5. rug
6. shade
7. drive
8. joke
9. mule
10. plain
11. hay
12. keen
13. least
14. loan
15. show
16. walk
17. haul
18. jaw
19. soil
20. joy
21. frown
22. trout
23. term
24. curl
25. birch
26. rare
27. star
28. porch
29. smooth
30. shook

Directions: Have pupil read words from one copy while examiner makes another copy. Do not give pupil a second chance but accept immediate self-correction. Let every student try the whole first column. If he gets two words correct from word number six on, let him try the whole second column.

Appendix A_2

Grade One Written Language Measure
United States Office of Education
Cooperative Research Project

Directions to the Project Directors

Purpose

The enclosed Directions to the Classroom Teacher are designed to obtain two writing samples from all pupils in all treatment groups of your total population.

From the total number obtained, the stories written by those pupils who were given the Gilmore, Gates, Fry, and Karlsen tests should be drawn and corrected according to the correction procedures specified in a subsequent section.

There should, therefore, be two writing samples for each pupil in your randomly-selected population drawn for individual measurement.

ON EACH SET OF TEACHER DIRECTIONS IN THE SPACE PROVIDED, YOU SHOULD WRITE IN THE DATES WHEN THE SAMPLES SHOULD BE OBTAINED.

First Measure (Restricted Stimulus Measure)

The directions for obtaining the first sample are rather simple. Pupils will be asked to write their favorite story. Classroom teachers will encourage the pupils to write, but will not provide any other motivational assistance.

Second Measure

The second administration will attempt to approximate the normal writing situations and procedures employed by classroom teachers in individual projects. The intent in this instance is to give the teacher opportunity to develop the creative writing situation which would be normal for her pupils.

Coding: Individual Project Directors should provide instruction to treatment teachers on coding procedures unique to their project.

Sample:

Project number	Teacher number	Pupil number	Code
13	7	27	13-7-27

Or, if so desired, the individual project-pupil code number could be used.

The purpose of this coding is simply to insure proper identification for Coordinating Center analyses for "complexity-creativity" factors.

CORRECTION PROCEDURES

MECHANICS RATIO SCALE:

It is suggested that the papers be corrected by three staff members. Corrections should be made for:

Capitalization

- -Red (ball point) circles should be drawn around all possible capitalizations.
- -If the pupil has capitalized correctly, a red diagonal line should be drawn through the circle.

-The mechanics-ratio score for capitalization will be the number correct over the number possible.

-Score: -1 point for each correct capital in the title.

-1 point for each correct capital at the beginning of a sentence.

-1 point for each correct capitalization of a proper name.

-1 point for each correct capitalization of a day or month.

-1 point for each correctly capitalized "I."

Punctuation

-Blue (ball point) circles should be drawn around all possible punctuations.

-If the pupil has punctuated correctly, a blue diagonal line should be drawn through the circle.

-The mechanics-ratio score for punctuation will be the number correct over the number possible.

-Score: 1 point for each correct (.) period.

1 point for each correct (?) question mark.

1 point for each correct (!) exclamation mark.

1 point for each correct (" ") set of quotation marks.

1 point for each correct (,) comma in a direct quote.

Indentation

-Green (ball point) circles should be drawn around the first word of all possible indentations.

-If the pupil has indented correctly, a green diagonal line should be drawn through the circle.

-Score: 1 point for each correctly indented paragraph.

TOTAL MECHANICS-RATIO SCORE

The total mechanics-ratio score should be recorded as per cent: (6/12 = 50%, 25/32 = 70%). The obtained per cent of mechanics accuracy should be recorded on Card 2 in the columns which will be specified by the Coordinating Center.

Spelling

-Tally the number of spelling errors to the right of each line.

-A word incorrectly capitalized should be recorded as a spelling error.

-Subtract the number of errors from the total number of running words.

-Score as number of words spelled correctly over total number of running words.

TOTAL SPELLING-RUNNING WORD COUNT

The total number of words correctly spelled should be recorded on Card 2 in those columns which will be specified by the Coordinating Center.

The total number of running words should be recorded on Card 2 in those columns which will be specified by the Coordinating Center.

Sample:

> Heading (not counted)
>
> The boat
>
> The boat is on the water it is red.
> The nam of the boat is mare. Do you
> like that name.
>
> (Circles to be drawn in appropriate color)

Local Correction for Creativity Factors

Individual Project analyses for complexity-creativity factors may be made. It is hoped that additional tabulation markings be kept to a minimum.

Coordinating Center Analysis

It is hoped that additional funds will be made available for detailed analysis of these writing samples at the Coordinating Center, University of Minnesota. Obviously, this will be some time in the future, and probably too late for your immediate individual analysis of data.

As a contribution to needed research in the area of first grade writing ability, however, it is requested that following your local correction and analysis, the writing samples obtained from your randomly selected, individually tested population be forwarded to:

USOE Cooperative First Grade Coordinating Center
College of Education
The University of Minnesota
Minneapolis, Minnesota

First Grade Written Language Measures
USOE Cooperative Research Project

Directions to the Classroom Teacher

General Information

You are being asked to obtain two writing samples from each pupil in your classroom. We wish to emphasize the necessity of following the directions and procedures exactly.

As you realize, many other teachers throughout the nation will also be asked to obtain writing samples from their pupils. It is necessary, therefore, that these samples be obtained in all classrooms at approximately the same time and by following the same directions.

You are requested to obtain the first writing sample (Restricted Stimulus Measure) on ______________________________________.
(Project Director Specifies Date)

The second writing sample (Unique Stimulus Measure) should be obtained on ______________________________________.
(Project Director Specifies Date)

DIRECTIONS --- RESTRICTED STIMULUS MEASURE

Classroom Situation

No attempt should be made to enrich your normal room display through the use of word lists, pictures, dictionaries, etc. The classroom conditions should approximate those normally found in your daily writing activities.

Materials

The writing paper and pencils customarily used in your classroom should be used in obtaining this sample.

Identification

The pupil's name, teacher's name, and the school should be indicated on each pupil's paper. In some cases, you might initial the back of each paper, or a code number may be assigned by your Project Director.

Teacher Directions to the Pupils

You are requested to spend a minimum amount of time motivating the class to write a story. This motivation should consist of:

1. General encouragement to the whole class that you are interested in reading their stories and that they are to use their very best handwriting.
2. Additional encouragement to individual pupils by such directions as:

> "I'm sure you have an interesting story you would like to write for me today, Billy."
>
> "Sally, I'll bet you have a really good story you would like to write for me."
>
> "I liked that story you wrote for me last week, Mary. I'm sure you could write another one for me. Let's try."

This additional motivation should be of a general type and should be directed toward getting the pupils to write rather than in providing them with specific ideas.

It is particularly cautioned that no specific titles be presented, nor should pictures or other stimuli be employed.

Other Procedures

No spelling help should be provided during the writing period.

If pupils request spelling assistance, they should be told to try to spell the word and then encouraged to proceed.

If pupils normally use a simplified dictionary or write from displayed flashcards or use a speller, such practices may be allowed.

Under no circumstances, however, should you correct misspellings, give ideas, or assist the pupil beyond the point of general encouragement.

Time Limit

Following the heading of the paper, twenty minutes should be allowed for the pupils to finish their stories. Papers of pupils who finish early should be inconspicuously collected and a coloring exercise or similar silent activity should be provided for the remainder of the twenty minutes.

Written Sample Identification

At the end of twenty minutes, all stories should be collected, packaged, and clearly labeled:

RESTRICTED STIMULUS SAMPLES (Date______________)

You are not to correct these stories; they will be corrected and scored by the Project Director's Staff who will apprise you of the correction procedures should you desire this information.

DIRECTIONS --- UNIQUE STIMULUS MEASURE

This second writing sample should be obtained on the date specified by your Project Director.

The purpose of this measure is to give your pupils an opportunity to write stories using a motivational stimulus with which they are familiar.

Materials

The writing paper and pencils customarily used in your classroom should be used for obtaining this sample.

Identification

The pupil's name, teacher's name, and the school should be indicated on each pupil's paper. In some cases, you might initial the back of each paper, or a code number may be assigned by your Project Director.

Teacher Directions to the Pupils

You may spend as much time as you normally would spend in motivating your pupils to write a story. The amount of time which you spend on this motivational activity should be indicated on the Unique Stimulus Checklist in the space provided.

You may use whatever motivational devices you normally use in encouraging your pupils to write stories.

The research value of these samples depends on your ability to maintain a normal classroom writing situation and then to briefly, but accurately, describe the procedures which you employed.

We are not looking for a "special" kind of writing or a "special" story. We are hopeful, however, of obtaining (according to the ability levels of your pupils) phrases, sentences, or stories which would be typical of those written by your pupils.

Other Procedures

No teacher spelling help should be provided during the writing period. Pupils should be encouraged to try to spell requested words and urged to continue writing.

Spelling aids used by pupils in regular writing periods may be used; use of aids of this kind should be indicated on the Unique Stimulus Checklist.

Time Limit

Following the heading of the paper, twenty minutes should be allowed for the pupils to finish their stories. Papers of pupils who finish early should be inconspicuously collected and a coloring exercise or similar silent activity should be provided for the remainder of the twenty minutes.

Written Sample Identification

At the end of twenty minutes all stories should be collected, packaged, and clearly labeled:

UNIQUE STIMULUS SAMPLES (Date____________)

You are not to correct these stories; they will be corrected and scored by the Project Director's Staff who will apprise you of the correction procedures should you desire this information.

Attach the Unique Stimulus Checklist to the writing samples and forward to the Project Director in the manner specified.

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Teacher Rating

Class Structure

0 Teacher is generally vague and directions seem confusing to the children
1 There is generally more vagueness than clarity and more looseness than structure
2 There is a moderate degree of structure and information on expectations. Some degree of vagueness.
3 Teacher is generally well organized and clear in assigning tasks--directions and expectations clear, but not spelled out as below
4 Teacher structures for the children--gives detailed clear directions, and expectations are clearly spelled out in detail

Extent of Class Participation

0 Class is generally unresponsive with only a very few children actually participating
1 Participation is highly variable, but tends to be low quite often
2 Teacher has a group of children who are participating well most of the time, but a fairly large group who are not consistently with the teacher
3 Moderately high participation on part of most children, most of the time but with some variability
4 High participation on part of most children at all times

Awareness of and Attention Paid to Individual Needs of Pupils

0 Total lack of awareness on the part of the teacher to the individual instructional needs of the pupils
1 Limited awareness of and attention paid to individual needs of pupils
2 There is moderate awareness and adjustment of instruction by the teacher based upon the needs of individual pupils in the class
3 Teacher is generally aware of pupil needs and attempts to make the necessary instructional adjustments in light of these needs
4 Teacher exceptionally aware of pupil needs with effective adjustment of instruction in light of these needs

Overall Teacher Competence

0 Incompetent
1 Poor
2 Adequate
3 Good
4 Excellent

Appendix B

UNITED STATES OFFICE OF EDUCATION
FRESNO STATE COLLEGE
RESEARCH PROJECT 2650

Independent Basal Reader Program

When a pupil passes the Ginn test, Little White House, with a high average or superior score and the teacher feels the pupil is able to work reliably on an independent level, the child should be allowed to do so.

Teacher materials needed: (Items 1 through 5 should be easily available to child)

1. Titled and numbered tagboard envelope for each story in book. See sample.
2. Large vocabulary cards to be filed in proper tagboard story envelope.
3. Phrase strip to be filed in proper story envelope.
4. Workbook contract to be stapled in front of child's On Cherry Street workbook. (See sample.)
5. Correction sheet to be stapled in back of child's On Cherry Street workbook. (See sample.)
6. Comprehension questions on each story.
7. Conference cards or notebook for each pupil.
8. Individual record sheet for vocabulary. (See sample.)

Pupil material needed:

1. On Cherry Street text
2. On Cherry Street workbook

Routine procedure for pupil:

When each child is ready to begin the first story he goes to the On Cherry Street file and brings the tagboard envelope for that story to the teacher.

Teacher pulls the large vocabulary words and teaches each side of the card to the pupil. (Teach meaning only when necessary.) Teacher then shows the words to the pupil; pupil pronounces them.

If envelope contains a phrase strip, teacher hears child read the phrases -- asking him to read more rapidly any phrase which is read word by word.

Teacher replaces materials taken from envelope, hands it to child. Child refiles envelope according to number.

Pupil reads the story silently, completes workbook pages as assigned by contract and goes on to next story following the same procedure. Encourage the pupil to try to determine what is required on a workbook page. If he can't, he may request teacher help or the help of a child who has completed that particular page.

It is advisable to keep a very close check on pupils just beginning an independent program.

Workbooks should be checked daily. If a regular individual reading conference is not possible every other day, a quick comprehension check (use study guide questions if desired) should be made that often -- as well as listening to a very brief paragraph read orally.

The pupil on the independent program should have two or three conferences a week (depending upon child). Upon the completion of a unit in the text and workbook, the child should sign up (on the board or a special sign up sheet) and the teacher can give the workbook vocabulary test. (This is a good time for an individual conference.)

Naturally, the child will continue to have the usual varied reading program -- skills lessons if necessary, oral team reading, oral reading for diagnosis, comprehension skills exercises, etc. . .

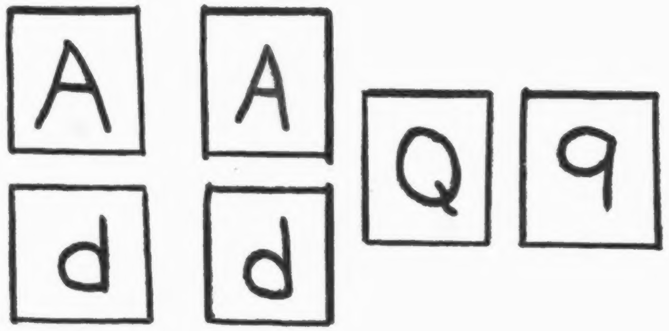
VISUAL DISCRIMINATION SKILLS

A. Ability to Directly Match Letters (Upper and Lower Case)
B. Ability to Match Letters Shown (Upper and Lower Case)
C. Ability to Relate Upper and Lower Case Letters
Letter sequence
Upper Case - O X A B T C L R I S P N F
E H D M K Z J Y W G Q U V

Lower Case - o x s c i p t m k z e w r
j y f n a h v u b d l g q

I. Activities for Teaching

1. Letter Matching Game
3" x 4" cards marked with letters of alphabet (two cards per letter) one upper case set, one lower case set, one mixed set.



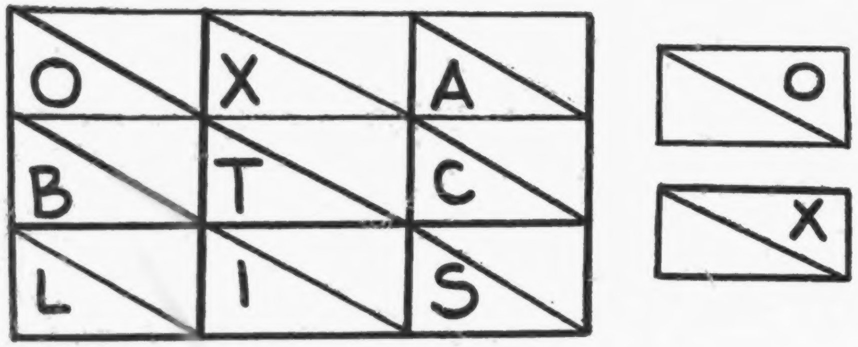
2. ABC-O
Two sets of six cards, each divided into nine squares, each square divided into two triangles. One set of cards is marked with upper case letters in lower triangle, another set with lower case letters. Upper triangle is blank on card.

II. Use of Activity

1. To teach skill A.
Pupils are given six or eight cards from any of three sets. Remaining cards are stacked face down. Pupils draw in turn. Matched pairs are placed on table. Pupils discard a card face up after each draw. A card may be drawn from the discard set if it can be matched with a card in a pupil's hand. Discard pile is turned face down and is used when original pile is depleted.
To teach skill C.
Use one upper case set and one lower case set or as many letters as desired. Shuffle the two sets and proceed as in "A" matching upper to lower case letters.

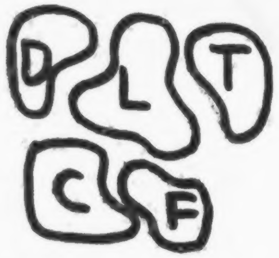
2. To teach A.
Pupils may complete card by correctly matching all triangles. New sequence cards are added until letters can be matched. Use upper then lower case sets.

Nine matching triangles are used to match to lower letter. Cards are color keyed. Review letters are used for each card.
Red - AXTBO, Orange - CLRISBO, Blue - PNFEHRS, Green - DMKZJEH, Purple - YWGQUSV. Matching triangles are lettered in color to correspond with card.



To teach B.
Flash cards may be shown by teacher or another pupil. Pupils find matching letter on card and cover shown letters with marker.
To teach C.
Teacher may flash upper case card and pupils cover lower case letters. Pupils have upper case triangles and lower case cards.

3. Matching Puzzle Pieces

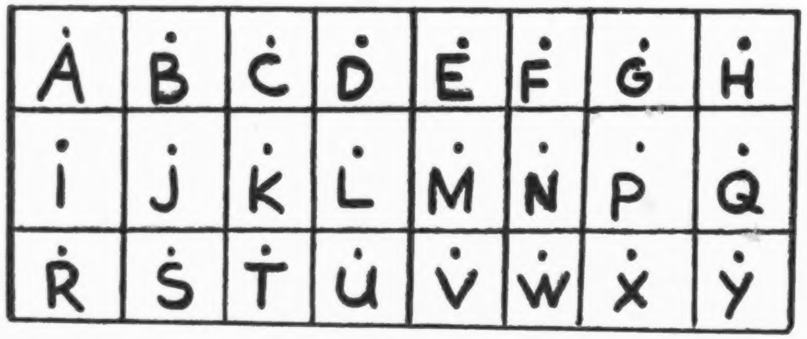


Mark puzzle back and corresponding pieces with letters. Some may have all pieces marked with upper case, some all with lower case, some with back in upper case and parts with lower case.

3. To teach A.
Pupil mixes parts of puzzle and completes puzzle by matching letter parts. Use upper or lower case puzzle as needed.
To teach C.
Use set marked with upper case on back and lower case on pieces.

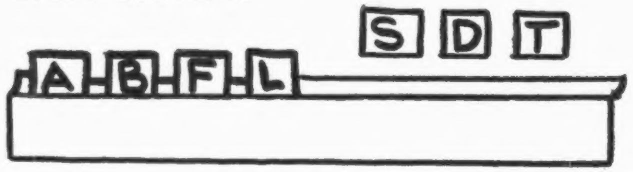
4. Peg Board - Cube Game
A peg board is marked into 24 squares, each square containing a letter (except X and O). 3/4" cubes are marked by color according to a learning sequence. Black - TBLCAR, Purple - LSPNFE, Red - HDMKZJ, Blue - YWGQUV. One letter on each face of cube.

4. To teach A.
Pupils toss cube, or cubes, according to letters being taught, and place peg in hold on the board matching letter on cube face.
To teach B.
Teacher shows flash card of letter. Pupils mark letter shown with peg on board.



To teach C.
Teacher may show lower case flash card and have pupil put peg on corresponding upper case letter in peg board.

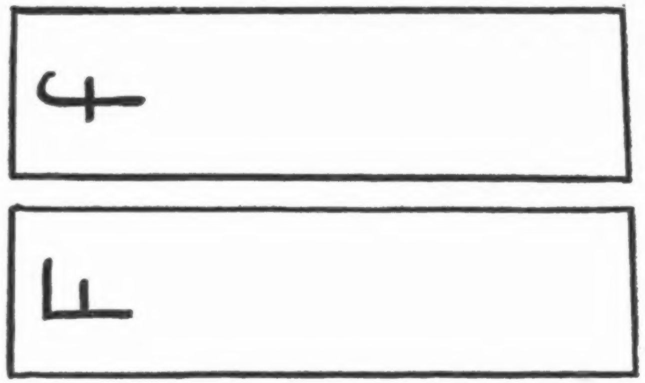
5. Scrabble Letter Game
Letters are printed on small wooden blocks 3/4" x 1/4"; a grooved rack about 12" long holds letters.



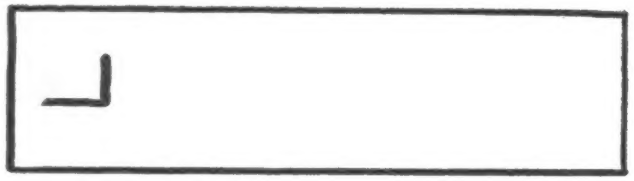
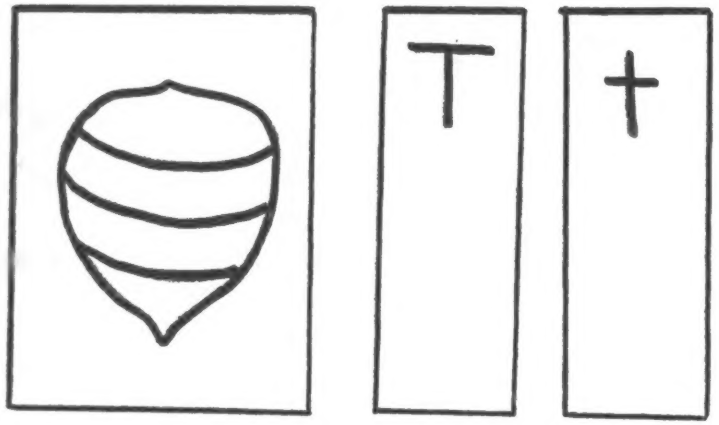
5. To teach B.
Each pupil is given 7-10 letters which he places on a rack. The teacher or a pupil picks letters from a master box or uses flash cards which are displayed for pupils. If they can match a letter shown they remove it from their rack and place it in front of them.

AUDITORY DISCRIMINATION SKILLS
D. Ability to Identify Letters Named (Upper and Lower Case)
E. Ability to Name Letters (Upper and Lower Case)
F. Ability to hear sounds in words and relate symbol and sound

I. Activity for Teaching
   1. Use materials V.D.S. #2



II. Use of Activity
   1. To teach A.
      Teach letters in order of "sequence" (see V.D.S.) using and adding cards as needed.
      To teach D.
      Call Letters. Pupils pick up correct letter and place in appropriate triangle. Teacher may vary game by allowing win when pupil has completed rows across, down or diagonally.
      To teach E.
      Pupils may name letters on ABC-O Card and place a marker in connecting triangle. Use cards in color sequence.

2. Use materials in V.D.S. #4	2. To teach D. Teacher calls letter. Pupil places peg in proper square. To teach E. Three or four pupils are assigned pegs by color. Each throws the letter cubes in turn. Pupil names a letter on the face of one cube and places a peg in the hole corresponding to that letter.
3. Use materials in V.D.S. #5	3. To teach D. Same as 5 - V.D.S. except letters are "named" instead of "shown."
4. Individual alphabet cards 1" x 3" marked with upper case 	4. To teach E. Pupils each have five or six alphabet cards for letters being taught. As teacher names letter, pupils respond with the proper card. As letters are learned, new letters are added to the set. Pupils work with maximum of five letters per set.
5. Pictures representing consonant sounds, and alphabet flash cards. 	5. To teach F. 1. Each pupil in turn says a word indicated by a picture, such as "soup." All pupils repeat word. Pupil says "soup" begins with "s," turns picture over and checks symbol on back of picture. Pupils respond with letter. 2. One pupil shows picture. Pupils respond with letter flash card representing consonant sound. Check letter on back of picture. 3. Teacher shows picture; pupils respond with flash card and give sound made by symbol. 4. Teacher says word (no picture); pupils respond with individual letter cards. 5. Each new sound is presented as above until pupils are discriminating among 3-5 letter sounds at one time. New letters are added and reviewed until all initial consonant sounds are learned.

6. Double-sided tachistoscope and insert cards 12"-14" long. Insert card is made up of small pictures representing 4 or 5 consonant sounds in learning sequence as described in A.D.S. #5. On the reverse side of the picture is the letter symbol for the consonant sound.	6. To teach F. Paired practice. One pupil names picture, says letter representing sound. Partner checks letter for correctness.
7. Activity V.D.S. #4	7. To teach F. (a) A word may be given and pupils place a peg in hole for letter representing the beginning sound. (b) Pupils may use cubes and give a word starting with the sound represented by the symbol on the cube face.

Appendix B_2

FIRST GRADE
for use with
TREATMENT GROUPS B and C

Applied Phonics

Introduction

The following lessons provide practice in applied phonics for the primary grades. The first word in each exercise is in the reading vocabulary for grades one or two.[1] The next four words are in the speaking vocabulary, and may or may not be in the reading vocabulary at this level. The purpose is to apply known sounds (beginning consonants and blends) to new words.

Lesson Plan

There are four sets of lessons, increasing in order of difficulty:

Set 1: 15 exercises. Words begin with single consonants.

Set 2: 25 exercises. The known word begins with a single consonant. The new words begin with single consonants or blends.

Set 3: 15 exercises. The known word begins with a blend. The new words begin with a single consonant or a blend.

Set 4: 15 exercises. The first word is a known word, such as 'old.' The new words are formed by placing a single consonant or blend before the word.

In each exercise, the first word is the known word. The child selects three of the four new words, in accordance with the teacher's oral directions.

These are to be used as a whole class or whole group exercise, as needed. Each child should have multi-response cards.

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[1] Bennett, E. Virginia, "The Construction and Evaluation of Group Tests in Reading for Grades One, Two, and Three." Unpublished Master's Thesis, Boston University School of Education, 1953.

EXAMPLE

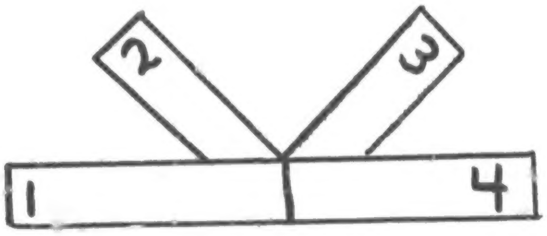
1. Use sentence strips. Print words and put a number under each word after the slant / line. Example: far/ $\underset{1}{\text{car}}$ $\underset{2}{\text{bar}}$ $\underset{3}{\text{jar}}$ $\underset{4}{\text{tar}}$. The children have multi-response cards 1 - 2 - 3 - 4. The teacher says, "The first word says 'far'." The children respond, 'far'.

Now show me the word that tells in what you buy peanut butter. The children respond with multi-response card #3. The teacher says "What is the word?" Children respond with the word.

The teacher will continue through each word in the group, saying "Show me the number under the word which tells or means ______." Children will respond with correct number, and give the word orally when the teacher calls for it.

Multi-response cards:

1" x 3" number written at top on both sides. Put together in fan shape with staples so they are stationary



2. Another practice is for the teacher to call the number and have the children respond with the word. Speed up responses as much as possible.

3. After giving first word on phrase strip, cover beginning sound - showing phonogram and let children supply the first sound to make a word.

Sample Lesson, Applied Phonics, USOE 2650

1. bag / tag rag wag gag
   1 2 3 4

   The first word says bag. (1) What a dog's tail does (wag). (2) A running game (tag). (3) An old piece of cloth (rag).

2. cold / fold sold told gold
   1 2 3 4

   The first word says cold. (1) What you do with sheets and towels (fold). (2) When you "gave away" a secret (told). (3) An expensive yellow metal (gold).

3. fat / hat mat bat rat
   1 2 3 4

   The first word says fat. (1) Something you use to hit a baseball (bat). (2) What keeps your head warm (hat). (3) An animal that looks like a very big mouse (rat).

4. tell / well sell yell fell
   1 2 3 4

   The first word says tell. (1) Something loud you do with your voice (yell). (2) How you feel (well). (3) What salesmen do (sell).

5. saw / law raw jaw paw
   1 2 3 4

   The first word says saw. (1) An animal's foot (paw). (2) A word that means "not cooked" (raw). (3) Something that moves when you talk (jaw).

6. bump / lump hump dump pump
   1 2 3 4

   The first word says bump. (1) What a camel has (hump). (2) A kind of truck (dump). (3) Something that brings out of a well (pump).

7. ball / tall call fall hall
   1 2 3 4

   The first word says ball. (1) A season of the year (fall). (2) What grown-ups are (tall). (3) Part of the house or the school (hall).

8. pets / nets wets sets bets
   1 2 3 4

   The first word says pets. (1) What you catch fish in (nets). (2) Something the sun does (sets). (3) What rain does to grass (wets).

9. tail / pail rail wail sail
   1 2 3 4

   The first word says tail. (1) Part of a fence (rail). (2) What a boat does (sail). (3) What Jack and Jill took to get water in (pail).

10. tap / nap cap map lap
    1 2 3 4

    The first word says tap. (1) Something you wear on your head (cap). (2) A nice place to sit (lap). (3) A short sleep (nap).

USOE Research Project 2650

SUGGESTED LESSON PLANS FOR TEACHING MAIN IDEA

Level I

Purpose of Activity: Teaching main idea as related to pictures. Starting on a sample level for greater understanding.

Materials: Flannel board and many pictures relating to one main idea.

Procedure: Be sure the pupils know the meaning of the words main and idea.

Start by asking the pupils to look carefully at all the pictures on the falnnel board. Ask them to tell you what the pictures are (example: dogs). How are all of these pictures alike? Here are three main ideas. (Of the three main ideas that you have selected be sure that only one is the obvious answer.) Only one of these ideas is about all of the pictures. Which one do you think that it is?

Example: Airplanes
Dogs
Buildings

Level II

Purpose of Activity: Teaching main idea as related to pictures on a slightly higher level.

Materials: Flannel board and many pictures relating to one main idea.

Procedure: Start by reviewing the meaning of the words main and idea.

Continue by asking the pupils to look carefully at all of the pictures on the flannel board. Ask them to tell you what the pictures are (example: zoo animals). How are all of these pictures alike? Here are three main ideas. (The three main ideas suggested this time should be more closely related.) Only one of these ideas is about all of the pictures. Which one do you think that it is?

Example: House Animals
Swimming Animals
Zoo Animals

Level III

Purpose of Activity: Teaching main idea as related to one picture with pocket chart and sentences.

Materials: Picture, pocket chart, sentence strips and card marked with X .

Procedure: Review Level II to recall the meaning of main idea. Discuss the picture with the children. Help the children find the main idea of the story orally.

Show the children three sentences, only one of which obviously gives the main idea, the other two are not related to the picture. Put the sentence strips in the pocket chart. Have the children decide which sentence tells about the main idea. Have a child put X card beside the sentence strip that gives the main idea.

Level IV

Purpose of Activity: Teaching main idea as related to one picture with pocket chart and sentences.

Materials: Picture, pocket chart, sentence strips and card marked with X .

Procedure: Have a discussion about the picture with the children. Help the children to find the main idea of the story orally.

Show the children three sentences, only one of which gives the main idea, the other two should also be related to the picture. Put the sentence strips in the pocket chart. Have the children decide which sentence tells about the main idea. Have a child put X card beside the sentence strip that gives the main idea.

Level V

Purpose of Activity: Teaching main idea of a story with pocket chart and sentence strips.

Materials: Pocket chart, sentence strips, book (Come With Us) and card marked with X .

Procedure: Review Level IV to recall the meaning of main idea. Read the children the first story in the book Come With Us. Help the children to find the main idea of the story orally.

Show the children the three sentence strips. Put the sentence strips in the pocket chart, only one of which gives the main idea, the other two should be related to the story. Have the children decide which sentence tells about the main idea. Have a child put X card beside the sentence strip that gives the main idea.

Level VI

Purpose of Activity: To teach main idea of written material as an independent, silent reading activity.

Materials: Ginn Supplementary Readers
Come With Us
Under the Apple Tree
Open the Gate
Reproduction of first exercise on large chart.
Booklet of main idea exercises based on the above readers.

Procedure: After reviewing Level V introduce the main idea exercises for the first story. Read sentences. Read the story involved.

Have a child print "X" in the proper place on the large chart. (This instead of using X card.)

Pass booklets. Refer to first exercise which is identical to the one just completed by the class. Point out story title - pages. Show that this is what you read from the book. Have each child complete his first exercise individually according to the chart.

Ask the class what the next story would be. What pages? Read story. Let children complete the second exercise individually as you circulate around the room.

Introduce your methods of assignment - work - correction - record keeping, etc. . .

USOE Research Project 2650

SUGGESTED PLANS FOR TEACHING LOGICAL SEQUENCE

Level I

Purpose of Activity: Teaching logical sequence as related to nursery rhymes. Starting on a simple level for greater understanding.

Materials: Flannel board and three nursery rhyme pictures.

Procedure: Start by asking the pupils if they know the nursery rhyme, Jack and Jill. Say the rhyme together. Put the three Jack and Jill pictures on the flannel board not in logical sequence. Ask the children if the pictures are in the correct sequence according to the nursery rhyme. If they say no, have one child come up and put the pictures in the correct order, left to right on the board. Mix the pictures again and repeat the procedure (using different children) until you fell all understand. Stress the meaning of and use the term "logical sequence" at all times.

Level II

Purpose of Activity: Teaching logical sequence by using nursery rhymes. Rearranging numbers instead of pictures.

Materials: Flannel board, nursery rhyme pictures (example· Little Miss Muffet) numerals (1, 2, 3, and 4) and individual response cards (packet of numerals up to 4).

Procedure: Continue to use a familiar nursery rhyme (example: Little Miss Muffet). Review lesson I using the new nursery rhyme. Now mix the pictures up again and this time tell the children the pictures will not move. At this point, place the pictures in a column.

Example: 4
1
3
2

Introduce numerals (1 thru 4). Put the numeral one by the picture which shows what happened first. Put the numeral two by the picture that shows what happened second. Put numeral three by the picture that shows what happened next. Put the numeral four by the picture that comes last. Mix the pictures several times letting different children place the numerals.

At level II, instead of letting one child place all numbers, choose four different children and give each one a number. Have the children come up in number sequence. Do this until all understand.

If using individual response cards for each child, put the nursery rhyme (Little Miss Muffet) on the flannel board out of sequence. Show the children how the individual response cards would work. Pass the individual response cards to each of the children. The children place the numerals in a column on their desk (or on the floor in front of them) in the order which will show the correct story sequence.

Level III

Purpose of Activity: Teaching logical sequence of a story with pocket chart phrases.

Materials: Pocket chart, phrase strips, book (Come With Us) numerals (1, 2, and 3), and individual response numerals.

Procedure: Review Lesson II with the nursery rhyme (Little Miss Muffet) showing the numeral sequence.

Read the children the first story in the book Come With Us. Help the children to find the sequence of the story orally.

Show the children the three sentences making up the sequence of the story written on phrase strips. Put the phrase strips in the pocket chart out of sequence. Have the children put the numeral one by the sentence that comes first, put the numeral two by the sentence that comes second and the numeral three by the sentence that comes third. Have the children close their eyes while the teacher rearranges the phrase strips. Have another group of children participate.

Pass out the individual response numerals. Teacher puts phrases in incorrect sequence. The children place the individual response numerals in a column - the order of which will show the correct sequence.

Level IV

Purpose of Activity: To teach logical sequence of written material as an independent, silent reading activity.

Materials: Ginn Supplementary Readers

Come With Us

Under the Apple Tree

Open the Gate

Reproduction of first exercise on large chart.

Booklet of logical sequence exercises based on above readers.

Procedure: After reviewing Level III, introduce the logical sequence exercises for the first story. Read sentences. Read the story involved.

Have children print in the numerals in the proper places on the large chart. (This instead of using numeral cards.)

Pass booklets. Refer to first exercise which is identical to the one just completed by the class. Point out Story Title - pages. Show that this is what you read from the book. Have each child complete his first exercise individually according to the chart.

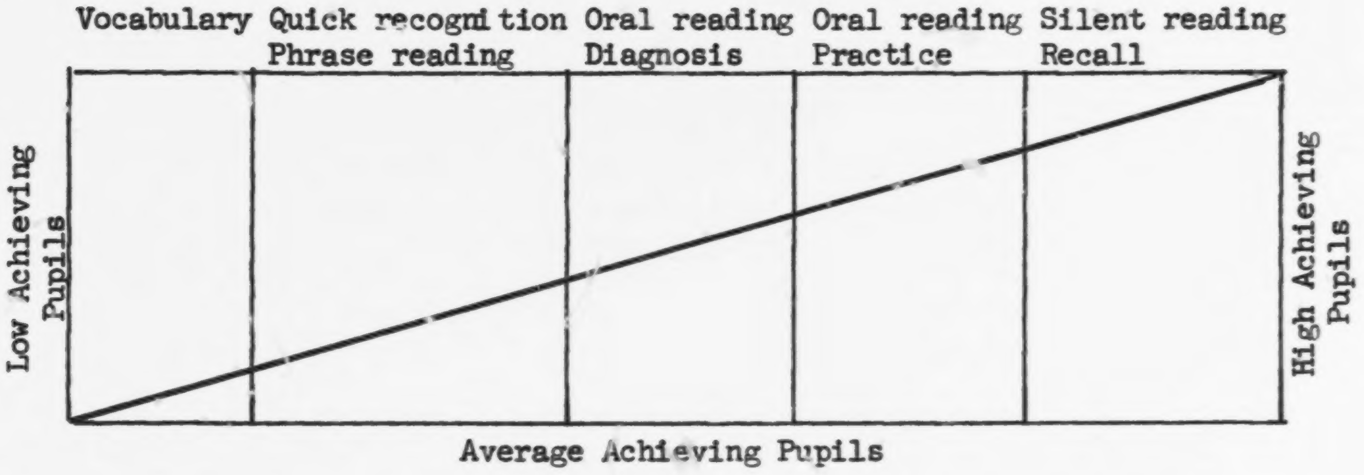
Ask the class what the next story would be. What pages? Read story. Let children complete the second exercise individually as you circulate around the room.

Introduce your methods of assignment - work - correction - record keeping, etc. . .

Appendix B$_4$

Differentiation of Instruction

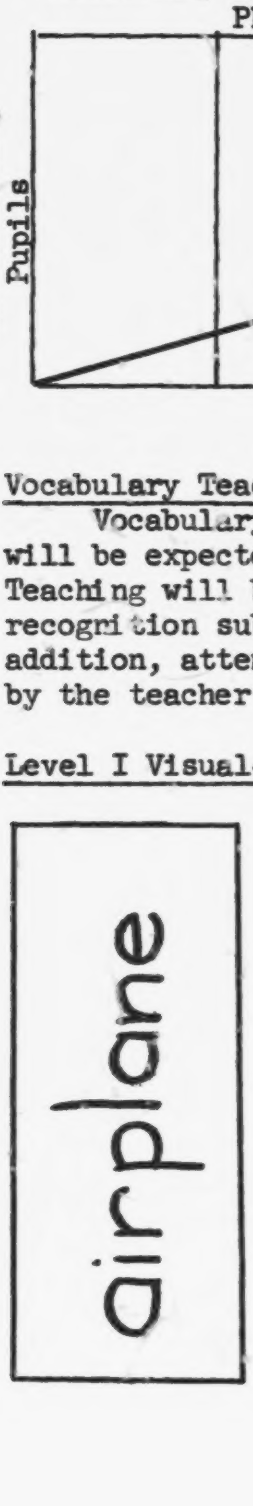
In the use of basal reading materials, differentiation of instruction in the skills areas of vocabulary, phrase reading, oral reading (diagnosis), oral reading practice (comprehension skills), silent reading (recall skills), will follow the principle illustrated in the diagram below. Comparative time allotments for teacher instruction and pupil practice are indicated.


Vocabulary
Quick recognition Phrase reading
Oral reading Diagnosis
Oral reading Practice
Silent reading Recall
Low Achieving Pupils
High Achieving Pupils
Average Achieving Pupils

A. Vocabulary Teaching

Vocabulary skills teaching will follow a three level design. Pupils will be expected to achieve mastery before advancing to higher levels. Teaching will be adjusted to ability level, learning rate, and word recognition sub-skills weaknesses of visual-auditory discrimination. In addition, attention will be directed to the patterns of error as recorded by the teacher during oral reading for diagnosis.

Level I Visual-Auditory Every Pupil Response Technique



Teacher presents pupils with individual flash cards 1" x 3" which are duplicates of her own 3" x 12" cards. Teacher introduces word and surrounds with meaning appropriate to the enrichment level of the pupils. The number of words presented will correspond to the obtained learning rate. After the desired number of words are presented, teacher directs pupils to respond to:

Word Recognition

"Show me the word airplane."

Pupils respond with appropriate 1" x 3" individual flash card.

"Put and under airplane."

"Place father to the right of and."

Teacher observes as pupils follow directions. Many activities of arranging words, etc., can increase the number of practices until mastery is assured.

Word Meaning

"Show me the word that means ____________."
    Pupils respond with appropriate card.
    Various meanings can be given and practices can be intensified for those groups or pupils needing additional oral language background.

Word Analysis

Visual

"Show me the word with the letter (s) __ at the beginning (ending or middle)."
    Pupils respond with appropriate card.

Auditory

"Show me the word that begins with the __ sound."
    Pupils respond with the appropriate card.
"What is the word?"
    Pupils respond orally.
"What letter makes the __ sound in ___________?"

As pupils master the visual discrimination skills of the beginning, ending, and medial positions, auditory training with the vocabulary cards is introduced.

Beginning sounds, ending sounds and sounds in the medial position are stressed in sequence, in addition to skills practices given as a result of the oral reading - diagnosis error pattern.

When pupils master auditory elements, they proceed to Level II.

Level II Every Pupil Response - Word List Technique

Materials
    Teacher 3" x 12" flash cards
    Pupils 1" x 3" number cards
    Numbered list of words to be introduced
Procedure
    Teacher introduces words using large flash card method. Additional word recognition, word meaning, and word analysis skills can be practiced using individual number cards corresponding to word lists.

Level III Standard Flash Card Method
    Teacher introduces word using look-say method. Pupils respond orally to directions of teacher.

It is anticipated that pupils and groups will be on different levels at different times. High achieving pupils will progress through the levels faster and need less practice at Levels I and II. Slower achieving pupils will need more intensive practice especially at Level I. - auditory skills.

A systematic method of arranging and storing necessary materials has been devised to overcome organizational difficulties of the every pupil response method of vocabulary skills practice.

B. Phrase Reading

Teacher instruction and practice in phrase reading skills will follow a four level design. Pupils will progress to higher levels upon mastery of phrase reading skills at lower levels.

Level I instruction will utilize large phrase strips which pupils read together with teacher direction.

Level II instruction will utilize large phrase strips for teacher use, and numbered phrase lists and number cards 1" x 3" for pupil use. Pupils initially follow teacher direction as in Level I for oral response. Then using silent reading techniques, the pupil responds with number cards corresponding to proper phrase as teacher reads orally. Pupils may then read lists to each other. Various other techniques may be used with these lists.

Level III instruction will utilize a large tachistoscopic device with a "lift tab" for teacher use and phrase lists with number cards as in Level II. Techniques at this level will be used to improve visual memory and eye span by timed exposure. Pupils will respond to visual stimulus by showing number card corresponding to phrase on list.

Level IV instruction will employ paired practice techniques with a double sided tachistoscope. Phrase lists will be prepared for basal materials which can be inserted into tachistoscopic devices allowing pupils to view the phrase from opposite sides. This allows "pairs" of pupils to check one another while increasing the number of pupils participating in the practice.

C. Oral Reading - Diagnosis

During those periods when the pupils are reading for the purpose of diagnosis, the teacher will record mispronunciations, omissions, and words pronounced for the pupil. The teacher will review the errors of individual pupils to determine the pattern of error. Subsequent vocabulary lessons will be taught emphasizing those visual or auditory elements causing individual weaknesses.

D. Oral Reading - Practice

Oral reading for practice grouping will emphasize small group techniques.

Oral reading for practice will be conducted according to a five level design.

Level I Group reading, following oral reading for diagnosis, teacher records errors.

Level II Three pupil oral reading team, teacher directed; high achiever, team leader, records errors.

Level III Three pupil oral reading teams, high achieving pupil acts as word consultant. Group leader records errors for each group. In this grouping pattern the high achiever-word consultant reads material adjusted to silent reading level and gives assistance to individual teams only on request.

Level IV Three pupil oral reading teams, no word consultant. Group leader records errors.

Level V Two pupil oral reading teams, no word consultant. Pupils record own errors.

These patterns will be adjusted to the needs of various ability groups. Low achieving pupils will use Levels I, II, III; Average achieving pupils - Levels II, III, IV; and high achieving pupils - Levels IV and V. As independence in word recognition is achieved, pupils will move to more self-directing patterns.

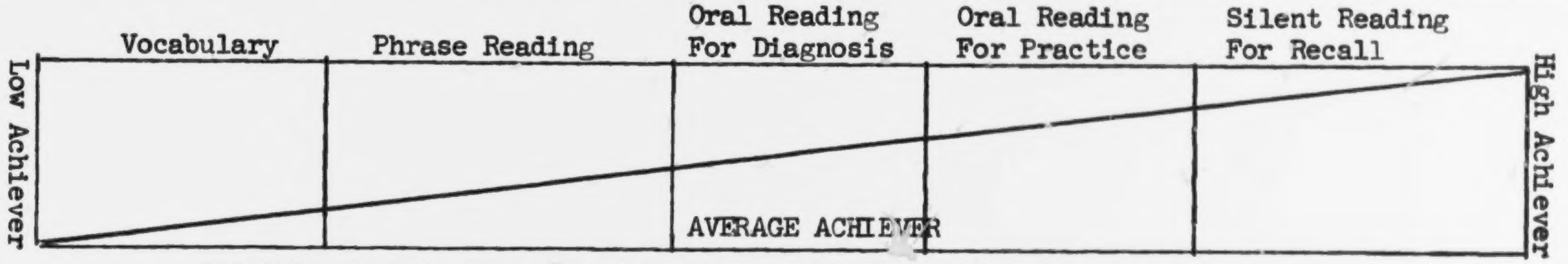
E. Silent Reading

Silent reading activities will be adjusted to the independent reading level. Time allotments for silent reading will be based on pupil attention and persistence and achievement level.

Three level (Recall-Elaborative Thinking-Critical Thinking) self-correcting study guides will be used by high achievers. Intensive practice will be afforded at each level to insure mastery.

SUMMARY CHART - LEVELS DESIGN FOR DIFFERENTIATED INSTRUCTION

	VOCABULARY	PHRASE READING	ORAL READING (Diagnosis)	ORAL READING (Practice)	SILENT READING (Recall)
Level V H.A.			Specific Method	2 man Oral Reading Team - no word consultant Pupils record errors	Critical Thinking
Level IV		Paired Practice Double Sided Tachistoscope	Using Tabbed Notebook Teacher records errors: Pupil said/ word was 1.Mispronunciations 2.Omissions 3.Insertions 4.Pronounced words	3 man Oral Reading Team - no consultant Leader Records Errors	Elaborative Thinking
Level III	Standard Flash Card ride Look-Say Method	Phrase list insert Tab-lift Tachistoscope Timed Exposure 1. Tom rides 2. See Tom Phrase List Number Cards for every pupil response 1.See Tom 1 2 2.Tom ran		3 man Oral Reading Team H.A.-Consultant Leader Records Errors	Recall Logical Sequence Main Idea
Level II	Word List Technique 1. ride – – 2. Tom 1 2 3. Look – – 4. and	Phrase Lists Silent Reading Every Pupil Response to Oral Reading Simulus 1. See Tom 2. Tom ran 1 2	Subsequent vocabulary presentations will emphasize visual/ auditory subskills weaknesses	3 man Oral Reading Teams Teacher Reading Consultant-Group Leader Recording	Recall Fact Question-Page Given Fact Question-No Page Given
Level I L.A.	Visual - Auditory Every Pupil Response Tom	Large Flash Card All pupil oral response See Tom Ride		Group Reading for Practice	Recall Blanks-listed words-pages Blanks-no words-pages listed


Vocabulary
Phrase Reading
Oral Reading For Diagnosis
Oral Reading For Practice
Silent Reading For Recall
Low Achiever
High Achiever
AVERAGE ACHIEVER

TEACHING LEVELS AND COMPARATIVE TIME ALLOTMENTS FOR BASIC READING ELEMENTS

Appendix B_5

Guide for Teaching Services in First Grade
USOE Research Project 2650
Treatments B and C

HIGH CAPACITY/ACHIEVEMENT PUPILS: Pupils should be initially grouped on the basis of the recommendation of the kindergarten teacher, pupil knowledge of letter names and the learning rate test. Complete instructions for giving these tests and recording results will be given in the workshop.

Letter Knowledge

-----Test all pupils for ability to name letters both upper and lower case. Compare the results of your testing with the June kindergarten scores. Keep accurate records of these letter deficiencies.

-----Test for knowledge of consonant sounds. These tests will be provided at the workshop. Keep accurate records of these phonic deficiencies.

-----Provide supplementary auditory discrimination letter practice where necessary. Complete letter kits similar to those used in the kindergartens will be made available.

-----It is not anticipated that high achieving pupils will need much supplementary letter practice. Blend training should begin immediately following mastery of consonant sounds. If some high ability pupils have not mastered consonant sounds because of non attendance in kindergarten, such pupils should participate in consonant sound drills with average achievers and in the supplementary auditory discrimination program.

-----Use reading readiness workbooks sparingly, if at all. Use only those exercises appropriate to remediate a skills deficiency. HIGH CAPACITY/ACHIEVEMENT PUPILS WHO HAVE LETTER KNOWLEDGE (ability to name 20 upper case and 17 lower case letters) AND HIGH LEARNING RATE SHOULD IMMEDIATELY BE PLACED IN THE LITTLE RED STORY BOOK.

VOCABULARY

-----Begin instruction with the Level I method. Practice word recognition, word meaning and word analysis skills where appropriate. These procedures will be reviewed at the workshop.

-----When pupils can respond successfully to beginning and ending sound exercises, begin Level II vocabulary method. IT IS TO BE EMPHASIZED THAT HIGH ABILITY PUPILS DO NOT NEED INTENSIVE LEVEL I PRACTICE.

-----Vocabulary, Level II is a transitional level and intended to provide opportunities for every pupil response. Level II practices should be eliminated as soon as practicable.

-----Level III (Standard flashcard method) should be introduced as soon as possible. The Level III method should be used for all vocabulary introduction following pupil mastery of the Level II technique.

PHRASE READING PRACTICE

-----Begin phrase and meaning drill immediately. Progress as rapidly and as efficiently as possible through Levels I, II, III. Concentrate on Level IV practices with each story to the end of the year.

-----When pupil ease in reading is apparent in oral reading for diagnosis periods, reduce the amount of time spent in phrase reading drill. A pupil who reads smoothly and with comprehension needs minimal phrase practice.

ORAL READING - DIAGNOSIS

-----High achieving pupils should read orally for diagnosis daily while in the Pre-Primers. Gradually phase these pupils into a program of reading for diagnosis 3 days per week in Little White House and On Cherry Street.

-----Adjust the amounts of time spent in diagnosis so that these high achievers get maximum silent reading opportunities.

-----Keep accurate records of errors made while reading orally for diagnosis. Review error patterns to improve vocabulary teaching. These procedures will be reviewed in the workshop. In addition, during the conduct of the study, meetings will be held to provide additional opportunities to diagnose word recognition errors and indicate remedial procedures.

ORAL READING - PRACTICE

-----Begin oral reading for practice with the pre-primers when pupils are in Little White House.

-----Use the Ginn Supplementary Readers adjusted to independent level.

-----Use oral reading teams of two or three.

-----Average amounts of time to be spent in oral reading for practice should be ten minutes, twice a week.

SILENT READING ACTIVITIES

-----A maximum amount of silent reading opportunities should be provided for high achieving pupils.

-----Pupils scoring high average or superior on the Ginn achievement test for Little White House will participate in a Basal Reader Independent Program through On Cherry Street. An individualized program will be incorporated for accelerated readers. The details of this program will be discussed and implemented in our August workshop.

ADDITIONAL PROCEDURES

-----A contract method of workbook assignments and correction methods will be conducted for high achieving pupils.

-----Reader's Digest Skill Builders will be regularly used for accelerated pupils. Incidental oral reading for diagnosis will be conducted by the teacher. Comprehension will be checked orally.

-----Study Guides may be used to supplement comprehension practice when needed. The assignment of study guide practice should be on an individual basis.

AVERAGE CAPACITY/ACHIEVEMENT PUPILS

-----Pupils should be initially grouped on the basis of the recommendation of the kindergarten teacher, pupil knowledge of letter names and the learning rate test.

LETTER KNOWLEDGE

-----An intensive letter knowledge and auditory discrimination program should be started for those pupils exhibiting phonetic deficiencies.

-----When pupils succeed in the recognition of consonant sounds, start blend training immediately. An accurate record of letter and sound knowledge deficiencies should be kept.

VOCABULARY

-----Vocabulary instruction should begin with the Level I method.

-----Intensive and systematic word recognition and word analysis practice should be provided.

-----Word meaning exercises should be adjusted to the enrichment background of the pupils.

-----Level II vocabulary method should be instituted where pupils successfully respond to beginning and ending sound drills.

-----Level III vocabulary method should be implemented as soon as efficiently practicable.

-----Applied phonics material (word classification) should be used for review.

-----Quick recognition should be encouraged through the use of tachistoscopes.

PHRASE READING

-----Progress through Levels I and II as rapidly and as efficiently as possible.

-----Concentrate on Level III to improve visual memory. These practices should be regularly scheduled as early as possible.

-----Level IV practices should be used with each story to the end of the year.

ORAL READING - DIAGNOSIS

-----Pupils in the average group(s) should read orally each day.

-----Detailed records of errors should be kept and frequently reviewed to improve vocabulary presentation.

-----Test comprehension skills regularly during these diagnosis periods.

-----Suggested procedures for these methods are attached. (Oral Reading - Diagnosis; Manning/FSC)

ORAL READING - PRACTICE

-----Start team reading (two or three pupils) when in Little White House. Use Pre-Primers to start procedures.

-----Use basal reader one step below for team reading.

-----Allow at least ten minutes, one period per week for these practice readings.

SILENT READING

-----A regular program of assignments following silent reading will be provided for average achieving pupils.

-----The use of independent activities in silent reading is encouraged.

-----Study guides for comprehension improvement should be completed on an individual pupil basis only.

ADDITIONAL PROCEDURES

-----Supplementary activities structural and comprehension skills will be used when individual pupils fail to pass achievement tests at each basal reader level.

-----Encourage free reading time on independent level throughout the year.

-----When pupils complete On Cherry Street and successfully pass the Ginn Achievement Test, they should be placed on an independent program with individual teacher conferences. These procedures will be outlined at the Workshop.

LOW CAPACITY/ACHIEVEMENT PUPILS

-----Pupils should be initially grouped on the basis of the recommendation of the kindergarten teacher, pupil knowledge of letter names and the learning rate test.

LETTER KNOWLEDGE

-----Test all pupils for ability to name letters (upper and lower case).

-----Provide intensive letter recognition program (current kindergarten program) for pupils with deficiencies in

- Direct matching of letters
- Ability to match letters shown
- Ability to recognize letters named
- Ability to name letters
- Ability to relate upper to lower case letters
- Ability to associate symbol and sound (auditory discrimination)

-----Provide opportunities for experience chart work in preparation for basal system reading.

-----Use reading readiness workbooks to assist in establishing pupil attention and persistence in learning.

-----Begin formal instruction in the *Little Red Story Book* when pupils can name at least 20 upper case and 17 lower case letters. Continue letter program as a supplementary activity until pupils can name all letters.

VOCABULARY

-----Adjust vocabulary teaching to the obtained learning rate and linguistic order (will be elaborated in the workshop).

-----Begin with Level I EPR method placing definite and consistent emphasis on word analysis skills.

-----A supplementary word practice technique should be used (to be explained in the workshop).

-----Use the *Little Red Story Book* workbook regularly. Provide opportunities for self-correction as pupils improve attention span and independent work habits.

-----Use materials for supplementary auditory discrimination and phonics practices.

Example: bag / tag wag rag bag
1 2 3 4

-----Test for ability to recognize consonant sounds.

-----Begin blend training immediately on mastery of beginning consonant sounds (these procedures will be detailed in the workshop).

-----It is expected that these pupils will need regular instruction at Level I Vocabulary; it should be provided. Teachers should insure, however, that *quick* recognition methods are included when using the EPR vocabulary cards.

-----Differentiate vocabulary presentations to individuals within this low capacity/achievement group. Where necessary, subgroup using Level II techniques with pupils who demonstrate improvement in word recognition skills.

PHRASE READING

-----Intensive regular phrase reading practice should be included in the daily reading lesson.

-----Use Levels I and II to improve understanding of linguistic "meaning" units (will be explained).

-----Use Level III technique with phrases previously learned by Level I and II methods. Level III techniques may be used *very early* in the program. these speeded practices will improve visual memory abilities. At first use Level III as a review technique only.

-----Begin Level IV practices as soon as practicable. Paired practice review of phrases previously learned is especially encouraged. These activities should be closely supervised.

ORAL READING - DIAGNOSIS

-----Low capacity/achievement pupils should read orally each day. Detailed and faithful recording of pupil errors should occur.

-----Errors should be regularly reviewed and analyzed for improved word recognition presentations. (The research staff will especially assist teachers in these procedures. Reteaching procedures and remedial materials and techniques will be both demonstrated and implemented by the staff.)

ORAL READING - PRACTICE

-----Begin these procedures cautiously and, where needed, with the assistance of the research staff.

-----Use pupils teams of two or three.

-----Begin these procedures when pupils are in Unit V, "The New Toys" (Little White House). Use the Pre-Primers for first experiences with oral reading for practice.

-----These practices should occur approximately once a week for a period of ten minutes.

SILENT READING

-----No silent reading practices should be undertaken unless the teacher is certain the pupil will experience no difficulty with vocabulary.

-----Silent reading activities are, however, encouraged: especially when the reading material is adjusted to independent level.

-----Silent reading activities should regularly occur through workbook exercises.

ADDITIONAL PROCEDURES

-----No study guides should be used with low capacity/achievement pupils.

-----Take these pupils through the BIG Little Red Story Book, if desired.

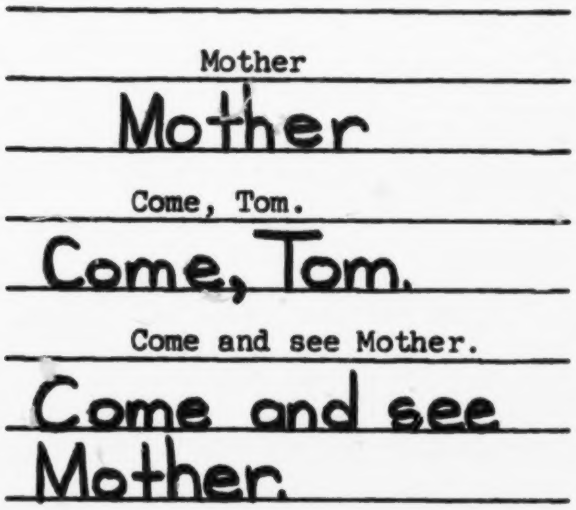
-----Independent reading activities should be encouraged (specific procedures will be outlined in the workshop).

Appendix C

BASAL READER WRITING PROGRAM, PROCEDURES
TREATMENT GROUP C

Enrichment Instruction - Written Language

Following mastery of manuscript printing, the development of written language will follow a ten level design. Each experimental classroom will contain a written language kit, for each level of the design. Each kit, based on reading vocabulary, will stress one level of writing development and will consist of twenty-four or more self-directing self-correcting exercises of gradually increasing difficulty. Individual assignments will be made according to ability level and/or pupil need. Pupils will progress according to individual learning rate.



Mother

Mother

Come, Tom.

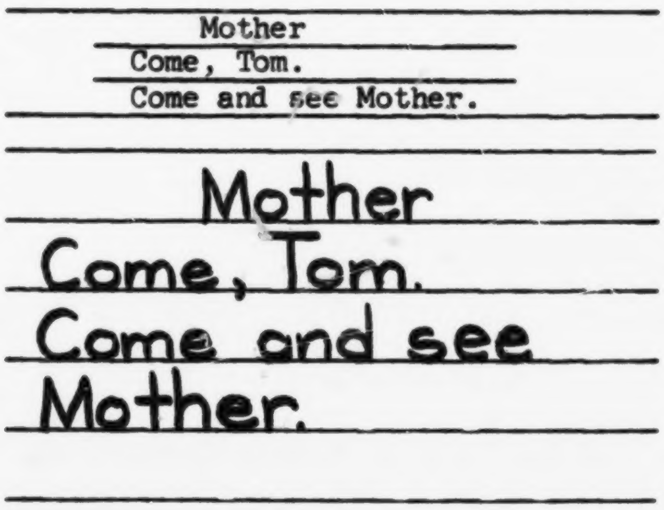
Come, Tom.

Come and see Mother.

Come and see Mother.

Level I Sentences, Direct Copying on Form

Initial written language practice will consist of direct copying of exercises stressing capitalization and punctuation of sentences. Thirty or more practices will be programed for the use of the period, question mark, quotation mark, and exclamation point. Various uses of capital letters will likewise be programed at increasingly difficult skills levels.



Mother
Come, Tom.
Come and see Mother.

Mother
Come, Tom.
Come and see
Mother.

Level II Sentences, Direct Copying to Form

Subsequent written language practice will be assigned on the basis of pupil mastery of Level I practice. Thirty or more practices beginning with two sentences increasing to four sentences will be used.

Level III Sentences, Direct Copying Without Form

Picture	Pony Father! Father! Come and see
Pony Father! Father! Come and see Pony. See Tom ride. Tom can ride Pony. Tom can ride fast.	Pony. See Tom ride. Tom can ride

Level III practices will be assigned as pupils demonstrate mastery of sentence form.
Programed practices of increasing difficulty will be used.

Level IV Sentence Composition on Form

The formal teaching of spelling will begin at Level IV. Spelling units of four or five words will be compiled using the reading vocabulary. Study techniques stressing visual memory practices and paired testing will be used. Pre-test procedures will be used. When pupils are ready for a final test they will complete a slip and place it in a pocket chart numbered according to spelling units. The teacher will give the final test after which the pupil is given a picture in context with the words in the spelling unit completed. Two types of writing exercises will be used at this level; explicit sentences to describe a picture and implicit sentences to describe what might have happened or what might happen next to the characters or in the incident depicted in the picture.

100 on pretest ______________ is
ready for final on Unit ________.

Spelling Units
1 2 3 4 5 6 7 8
9 10 11 12 13 14
15 16 17 18 19 etc.

Level V Homonym Practice

Intensive, sequential instruction will be provided to improve the spelling of homonyms. Practice will be provided on the basis of pupil need. There will be a differentiation of amounts of practice on particular homonyms for various ability groups. Practices will be self-correcting.

Level VI Paragraphs - Stories, Direct Copying on Form
Procedure: See Level I

Level VII Paragraphs - Stories, Direct Copying to Form
Procedure: See Level II
Level VIII Paragraphs - Stories, Direct Copying Without Form
Procedure: See Level III
Level IX Paragraphs - Stories, Composition on Form
Procedure: See Level IV
Level X Paragraphs - Stories, Composition Without Form
Procedure: See Level III

Written Language Correction Procedures

Spelling stories and paragraphs will be corrected according to a five level design. This design will stress the improvement of visual discrimination skills.

Level I - Teacher makes correction at the point of error. Pupil direct copies teacher corrections.

A heard F .
all at once they herd flip bark

Level II - Teacher places a check mark above point of error. Pupil corrects.

✓ ✓ ✓
all at once they herd flip bark ✓

Level III - Teacher corrects at line of error by indicating number of errors in the margin. Pupil locates errors and corrects.

4✓ all at once they herd flip bark

Level IV - Teacher indicates the number and type of error at the top of the paper. Pupil locates the errors and corrects.

all at once they herd flip bark 2C
1P
1S

Level V - Teacher records total number of errors in the composition at the top of the paper. Pupil locates the errors and corrects.

all at once they herd flip bark 4

The level at which the pupil's paper is corrected will be determined by the pupil's facility in proofreading and written language skills.

As the teacher corrects paragraphs and spelling stories she will note the individual weaknesses of each pupil. Pupils will be retaught and assigned appropriate exercises in the language kits. For example: a pupil weak in punctuation skills will be assigned work from the Level III and IV kit. When the pupil succeeds at this level he will progress to Level V. A pupil confusing where, were, and wear or there and their will be retaught and assigned the appropriate exercises in Level V.